HP StorageWorks

Enterprise File Services WAN Accelerator 1.2

installation and configuration guide

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Enterprise File Services WAN Accelerator 1.2 installation and configuration guide

Contents

Introduction

In This Introduction

Welcome to the *HP StorageWorks Enterprise File Services WAN Accelerator Installation and Configuration Guide*. Read this introduction for an overview of the information provided in this guide and for an understanding of the documentation conventions used throughout. This introduction contains the following sections:

About This Guide

The *HP StorageWorks Enterprise File Services WAN Accelerator Installation and Configuration Guide* describes how to install and configure the HP StorageWorks Enterprise File Services WAN Accelerator.

Types of Users

This guide is written for storage and network administrators with familiarity administering and managing networks using Common Internet File System (CIFS), HyperText Transport Protocol (HTTP), File Transfer Protocol (FTP), and Microsoft Exchange.

Organization of This Guide

The *HP StorageWorks Enterprise File Services WAN Accelerator Installation and Configuration Guide* includes the following chapters:

- Chapter 1, "Overview of the HP EFS WAN Accelerator," introduces the HP EFS WAN Accelerator.
- Chapter 2, "Installing and Configuring the HP EFS WAN Accelerator," describes how to install and configure the HP EFS WAN Accelerator.

- Chapter 3, "Advanced Network Deployments," describes advanced network configurations and outlines the basic steps for deploying them.
- Chapter 5, "Replacing HP EFS WAN Accelerator Components," describes how to replace HP EFS WAN Accelerator hard-disk drives and power supply units.
- Appendix A, "Technical Specifications and Regulatory Information," provides product technical specifications, environmental specifications, and regulatory information for the HP EFS WAN Accelerator.
- Appendix B, "HP EFS WAN Accelerator Ports," provides a list of default ports, and interactive and secure ports automatically forwarded by the HP EFS WAN Accelerator.
- Appendix C, "Software Licenses," provides the copyright material and license agreements for the software used in the development of the HP EFS WAN Accelerator software.

A glossary of terms follows the chapters, and a comprehensive index directs you to areas of particular interest.

Document Conventions

This manual uses the following standard set of typographical conventions to introduce new terms, illustrate screen displays, describe command syntax, and so forth.

Convention	Meaning
italics	Within text, new terms and emphasized words appear in italics.
boldface	Within text, commands, keywords, identifiers (names of classes, objects, constants, events, functions, program variables), environment variables, filenames, Graphical User Interface (GUI) controls, and other similar terms appear in boldface typeface.

Convention	Meaning
`Courier`	Information displayed on your terminal screen and information that you are instructed to enter appear in a Courier typeface.
KEYSTROKE	Keys that you are to press appear in uppercase letters in Helvetica font.
< >	Within syntax descriptions, values that you specify appear in angle brackets. For example: **interface <ipaddress>**
[ ]	Within syntax descriptions, optional keywords or variables appear in brackets. For example: **ntp peer <addr> [version <number>]**
{ }	Within syntax descriptions, required keywords or variables appear in braces. For example: **{delete <filename> | upload <filename>}**
|	Within syntax descriptions, the pipe symbol represents a choice to select one keyword or variable to the left or right of the symbol. (The keyword or variable can be either optional or required.) For example: **{delete <filename> | upload <filename>}**

Hardware and Software Dependencies

The following table summarizes the hardware and software requirements for the HP EFS WAN Accelerator.

HP Component	Hardware and Software Requirements
HP EFS WAN Accelerator	• 19 inch (483 mm) two or four-post rack.
HP EFS WAN Accelerator Management Console, HP StorageWorks Enterprise File Services WAN Accelerator Manager	• Any computer that supports a Web browser with color image display. • The Management Console has been tested with Mozilla, version, 1.2.1 and Microsoft Internet Explorer version 6.0x. NOTE: Javascript and cookies must be enabled in your Web browser.

Ethernet Network Compatibility

The HP EFS WAN Accelerator supports the following types of Ethernet networks:

- Fast Ethernet (IEEE 802.3u 100BaseTX)
- Gigabit Ethernet over Copper (IEEE 802.3ab 1000Base-T)

In-path HP EFS WAN Accelerator ports are Fast Ethernet auto-sensing.

The NIC1 (Primary) port in the HP EFS WAN Accelerator is 10/100/1000 Mbps auto-sensing. The HP EFS WAN Accelerator supports Jumbo Frames.

The HP EFS WAN Accelerator supports VLAN 802.1q. The HP EFS WAN Accelerator does not support the Cisco InterSwitch Link (ISL) protocol.

Antivirus Compatibility

The HP EFS WAN Accelerator has been tested with the following antivirus software with no impact on performance:

- Network Associates (McAfee) VirusScan 7.0.0 Enterprise on the server
- Network Associates (McAfee) VirusScan 7.1.0 Enterprise on the server
- Network Associates (McAfee) VirusScan 7.1.0 Enterprise on the client
- Symantec (Norton) AntiVirus Corporate Edition 8.1 on the server

The HP EFS WAN Accelerator has been tested with the following antivirus software with a noticeable to moderate impact on performance:

- F-Secure Anti-Virus 5.43 on the client

- F-Secure Anti-Virus 5.5 on the server
- Network Associates (McAfee) NetShield 4.5 on the server
- Network Associates VirusScan 4.5 for multi-platforms on the client
- Symantec (Norton) AntiVirus Corporate Edition 8.1 on the client

Additional Resources

This section describes the following resources that supplement the information in this guide:

- Release notes
- Related HP documentation
- Related technical reference books

Related HP Documentation

You can access the complete document set for the HP EFS WAN Accelerator from the documentation set CD-ROM:

- *HP EFS WAN Accelerator Management Console User's Guide* describes how to manage and administer an HP EFS WAN Accelerator using the Management Console.
- *HP EFS WAN Accelerator Command-Line Interface Reference Manual* is a reference manual for the HP EFS WAN Accelerator command-line interface. It lists commands, syntax, parameters, and example usage.
- *HP StorageWorks Enterprise File Services WAN Accelerator Manager User's Guide* describes how to install, configure, and administer a network made up of multiple HP EFS WAN Accelerators using the HP StorageWorks Enterprise File Services WAN Accelerator Manager.

Online Documentation

The HP EFS WAN Accelerator documentation set is periodically updated with new information. To access the most current version of the HP EFS WAN Accelerator documentation and other technical information, consult the HP technical support site located at **http://www.hp.com**.

Related Reading

To learn more about network administration, consult the following books:

- *Microsoft Windows 2000 Server Administrator's Companion* by Charlie Russell and Sharon Crawford (Microsoft Press, January 2000)
- *Common Internet File System (CIFS) Technical Reference* by the Storage Networking Industry Association (Storage Networking Industry Association, 2002)
- *TCP/IP Illustrated, Volume I, The Protocols* by W. R. Stevens (Addison-Wesley, 1994)
- *Internet Routing Architectures (2nd Edition)* by Bassam Halabi (Cisco Press, 2000)

Safety Guidelines

Follow these safety precautions when installing and setting up your equipment.

IMPORTANT: Failure to follow these safety guidelines can result in injury or damage to the HP EFS WAN Accelerator. Mishandling of the HP EFS WAN Accelerator voids all warranties. Please read and follow safety guidelines and installation instructions carefully.

Equipment Guidelines

Follow these safety guidelines when you install, setup, or remove components in the HP EFS WAN Accelerator:

- Follow all caution and warning instructions in this manual and marked on the equipment.
- Do not block or cover the openings to the HP EFS WAN Accelerator. Do not install the HP EFS WAN Accelerator in or near a plenium, air duct, radiator, or heat register.
- Do not make mechanical modifications to the HP EFS WAN Accelerator. HP is not responsible for the regulatory compliance of HP equipment that has been modified.
- Make sure that the area in which you install the HP EFS WAN Accelerator is properly ventilated and climate-controlled. For detailed information regarding environmental requirements, see Appendix A, "Technical Specifications and Regulatory Information."
- Use caution when you remove or replace system components; they can become hot to the touch.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the electrical rating label of the equipment.
- Never push objects of any kind through openings in the equipment. Dangerous voltages can be present. Conductive foreign objects could produce a short circuit and cause fire, electric shock, or damage to your equipment.
- The HP ProLiant DL380-3010 and DL380-5010 can weigh up to 60 pounds (27.22 kg), and the HP ProLiant DL320-510, DL320-1010, and DL320-2010 can weigh up to 37 pounds (16.78 kg). Lift the HP EFS WAN Accelerator using both hands and with your knees bent.
- The HP EFS WAN Accelerator might have more than one power cord. To reduce the risk of electrical shock, disconnect all power cords before servicing the appliance.

Rack Guidelines

Prior to installing the HP EFS WAN Accelerator in a rack, adhere to the following rack installation guidelines:

- The rack cannot have solid or restricted airflow doors. You must use a mesh door on the front and back of the rack or remove the doors to ensure adequate air flow to the system.
- Use a two or four post mounting rack.
- The rack width and depth must allow for proper serviceability and cable management.
- Make sure the rack is properly secured to the floor or ceiling.

IMPORTANT: Please ensure that there is adequate airflow in the rack. Improper installation or restricted airflow can damage the equipment.

Contacting HP

This section describes how to contact departments within HP.

NOTE: Do not load any other software on your HP StorageWorks EFS WAN Accelerator, as doing so will void your support agreement and you will not be able to receive HP technical support.

Technical Support

Telephone numbers for worldwide technical support are listed on the following HP web site: http://www.hp.com/support. From this web site, select the country of origin. For example, the North American technical support number is 800-633-3600.

NOTE: For continuous quality improvement, calls may be recorded or monitored.

Be sure to have the following information available before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

HP Storage Web Site

The HP web site has the latest information on this product, as well as the latest drivers. Access the storage site at: http://www.hp.com/country/us/eng/prodserv/storage.html. From this web site, select the appropriate product or solution.

HP NAS Services Web Site

The HP NAS Services site allows you to choose from convenient HP Care Pack Services packages or implement a custom support solution delivered by HP ProLiant Storage Server specialists and/or our certified service partners. For more information see us at http://www.hp.com/hps/storage/ns_nas.html.

CHAPTER 1

Overview of the HP EFS WAN Accelerator

In This Chapter

This chapter provides an overview of the HP EFS WAN Accelerator. This chapter includes the following sections:

Overview of the HP EFS WAN Accelerator

The HP EFS WAN Accelerator uses scalable data referencing (SDR) and transaction prediction to optimize throughput and save bandwidth on Wide Area Networks (WANs). With the HP EFS WAN Accelerator, you can improve the performance of your applications without interfering with your existing systems.

Definition of Terms

The following terms are used to describe features, attributes, and processes in the HP EFS WAN Accelerator:

- **Optimization**. The process of increasing data throughput and network performance over the WAN using the HP EFS WAN Accelerator. An optimized connection exhibits bandwidth reduction as it traverses the WAN due to the HP EFS WAN Accelerator.
- **Scalable Data Referencing**. The proprietary algorithms that allow an arbitrarily large amount of data to be represented by a small number of references to the HP EFS WAN Accelerator data store. As data flows through the HP EFS WAN Accelerator, all Transmission Control Protocol (TCP) traffic is mapped onto references to data that is stored on either side of the link. This technology increases WAN network performance and decreases consumed bandwidth.
- **Auto-discovery**. Auto-discovery is the process by which the HP EFS WAN Accelerator automatically intercepts and optimizes traffic on all Internet Protocol (IP) addresses and ports. By default, auto-discovery is applied to IP addresses and the ports which are not secure or interactive.

- **Fixed Target**. Fixed target rules directly specify out-of-path HP EFS WAN Accelerators near the target server. Determine which servers you would like a particular HP EFS WAN Accelerator to optimize (and, optionally, which ports), and add rules to specify the network of servers, ports, and out-of-path HP EFS WAN Accelerators to use.
- **Pass-Through**. Pass-through describes WAN traffic that traverses the network unoptimized. You define pass-through rules to exclude subnets from optimization. Traffic is also passed through when the device is in bypass mode. Pass-through might be due to in-path rules or because the connection was established before the HP EFS WAN Accelerator was put in place or before the service was enabled.
- **Bypass**. The HP EFS WAN Accelerator is equipped with a fail-through card to prevent a single point of failure. If there is a serious problem with the HP EFS WAN Accelerator, it goes into bypass mode and the traffic is passed-through unoptimized. For detailed information, see "Bypass Mode" on page 14.
- **Failover**. You can deploy redundant HP EFS WAN Accelerators in your network to ensure optimization continues if there is a failure in one of the HP EFS WAN Accelerators. You can enable failover support in the Management Console or you can use the HP EFS WAN Accelerator command-line interface.

Bypass Mode

The HP EFS WAN Accelerator is equipped with the Adlink Gigabit Ethernet Card with fail-through interface.

If there is a serious problem with the HP EFS WAN Accelerator, it goes into bypass mode to prevent a single point of failure. If the HP EFS WAN Accelerator is in bypass mode, you are notified in the following ways:

- The Intercept/Bypass status light on the fail-through interface is off.
- The Welcome page of the Management Console displays **Critical** in the Status box.
- Simple Network Management Protocol (SNMP) traps are sent.
- The event is logged to system logs (**syslog**).
- Email notifications are sent (if you have set this option).

When the HP EFS WAN Accelerator is in bypass mode the traffic passes through uninterrupted. Traffic that was optimized might be interrupted, depending on the behavior of the application-layer protocols. When connections are restored, they succeed, although without optimization.

In a one appliance, out-of-path deployment, if the HP EFS WAN Accelerator fails, the first connection from the client fails. After detecting that the HP EFS WAN Accelerator is down, an HP EFS WAN Accelerator **ping** channel is setup from the client-side HP EFS WAN Accelerator to the server-side HP EFS WAN Accelerator. Subsequent connections are passed through unoptimized. When the HP EFS WAN Accelerator **ping** succeeds, processing is restored and subsequent connections are intercepted and optimized.

When the fault is corrected, new connections that are made receive optimization, however connections made during the fault are not. To force all connections to be optimized, enable the *kickoff* feature. Generally, connections are short lived and kickoff is not necessary. It is suitable for very challenging remote environments. For detailed information about enabling the kickoff feature, see the *HP EFS WAN Accelerator Management Console User's Guide*.

IMPORTANT: HP EFS WAN Accelerator software Version 1.2 is compatible with Version 1.1.4 and newer versions.Version 1.1.4 and newer versions cannot communicate with Version 1.1.3 and older release installations due to a software protocol version change. If you are running Version 1.1.3, you must upgrade all the appliances in your network at the same time. If you are running Version 1.1.4 or later, you can mix and match versions of the HP EFS WAN Accelerator software (for example, 1.1.4 with 1.1.6). HP recommends you do not operate HP EFS WAN Accelerators in a mixed environment.

CHAPTER 2

Installing and Configuring the HP EFS WAN Accelerator

In This Chapter

This chapter describes how to install and configure the HP EFS WAN Accelerator. This chapter includes the following sections:

IMPORTANT: Please read and follow the safety guidelines described in "Safety Guidelines" on page 10. Failure to follow these safety guidelines can result in damage to the equipment.

Design and Deployment Overview

The following section summarizes the factors you need to consider before deploying the HP EFS WAN Accelerator in your network.

When you deploy the HP EFS WAN Accelerator, you must consider the following elements for each side (that is, the client and server-side) of your network.

1. Determine what kind of site you have:

- **User Locations**. An office that has users but no servers accessed by the other sites.
- **Server Locations (Data Centers)**. A central server location that remote offices access data from.
- **Users and Servers**. A site that has users and servers that are accessed remotely.

2. Determine what kind of Wide Area Network (WAN) routing infrastructure you have. For example, do you have one or two WAN routers?

3. How much bandwidth do you use? If you use large amounts of bandwidth, you need to consider deploying multiple HP EFS WAN Accelerators using a Layer-4 switch or deploying the HP EFS WAN Accelerator in a static cluster. (If you do not want to deploy multiple HP EFS WAN Accelerators, you can also deploy the HP EFS WAN Accelerator using the Web Cache Communication Protocol (WCCP) in networks with large bandwidth requirements.)

4. Choose a network template:
   - **In-Path**. The HP EFS WAN Accelerator is in the direct path between the client and the server. The client transparently communicates to the server; the server transparently communicates to the client, and there are HP EFS WAN Accelerators in between. In-path configurations are suitable for any location if the total bandwidth is within the limits of the installed HP EFS WAN Accelerator. For a detailed figure, see "Configuring In-Path HP EFS WAN Accelerators" on page 28.
   - **Out-of-Path**. The HP EFS WAN Accelerator is not in the direct path between the client and the server. An out-of-path configuration is suitable for data center locations where applications connect to the servers. For a detailed figure, see "Configuring Out-of-Path HP EFS WAN Accelerators" on page 35.

5. Determine how many HP EFS WAN Accelerators you need for your site:
   - One HP EFS WAN Accelerator is typically deployed in network environments with small to moderate bandwidth requirements.
   - Two HP EFS WAN Accelerators are deployed for redundancy in network environments where network outages cannot be tolerated.
   - Two HP EFS WAN Accelerators are deployed in network environments with multiple WAN links.
   - Multiple HP EFS WAN Accelerators are deployed in large sites using WCCP, Layer-4 switches or in static cluster configurations.

For detailed information about advanced network configurations such as redundant appliances, Layer-4 switch, Web Cache Communication Protocol (WCCP), and Policy Based Routing (PBR), see "Advanced Network Deployments" on page 45.

Checking Your Inventory

Your shipping carton contains the following items:

- The HP EFS WAN Accelerator—the HP ProLiant DL320-510, DL320-1010, or DL320-2010, or the HP ProLiant DL380-3010 or DL380-5010 (depending on your order)
- One CAT-5E straight-through cable
- One CAT-5E crossover cable
- One RS-232 serial null modem cable
- One or two rack mount power cables (depending on your order). In addition, you may have one or two power cables specific to your region or country.
- One rail kit
- Documentation set CD-ROM specific to your order

If any items are damaged or missing, notify HP technical support at **http://www.hp.com** for replacement or repair.

Preparing Your Site for Installation

The HP EFS WAN Accelerator is completely assembled with all the equipment parts in place and securely fastened.

Before you install the HP EFS WAN Accelerator, make sure your site meets the following requirements:

- A standard electronic environment where the ambient temperature is between 10° C and 35° C (50° F and 95° F) and the relative humidity is between 10% and 90% (non-condensing). For detailed information, see Appendix A, "Technical Specifications and Regulatory Information."
- Ethernet connections available within the standard Ethernet limit.
- Space on a two or four post 19-inch rack.
- A clean power source dedicated to computer devices and other electronic equipment.

Required Tools and Equipment

You need the following tools and equipment to mount the HP EFS WAN Accelerator to a rack:

- A standard 19 inch Telco-type mounting rack. The HP ProLiant DL380-3010 and DL380-5010 require 2 Units (U) of rack space. The HP ProLiant DL320-510, DL320-1010, and DL320-2010 require 1 U of rack space.

- Appropriate screwdriver for screws if mounting into a threaded-hole rack. Refer to the instructions that came with the rack mount kit. Also refer to the documentation that came with your system for important rack planning resource instructions.

NOTE: If mounting to a two-post rack, go to http://www.racksolutions.com/hp.

Required Configuration Information

Before you begin the installation and configuration process gather the necessary configuration information:

- Host name for the HP EFS WAN Accelerator
- Internet Protocol (IP) address for the HP EFS WAN Accelerator
- Netmask
- Default gateway (the WAN gateway)
- Domain Name Service (DNS) IP address
- Domain name for the system
- For in-path configurations: in-path interface IP address, in-path netmask, and in-path default gateway.
- For in-path configurations, check the speed and duplex settings on the Local Area Network (LAN) switch and WAN router that the HP EFS WAN Accelerator will connect to. The settings for the HP EFS WAN Accelerator and the LAN and WAN devices must match. If these settings do not match, optimization is degraded.

NOTE: The HP EFS WAN Accelerator automatically negotiates duplex settings. If one end of the link is set to auto-negotiate and the other end of the link is not set to auto-negotiate, the duplex settings default to half-duplex. This duplex mismatch passes traffic, but it causes late collisions and results in degraded optimization. To achieve maximum optimization set the devices to `100` or `full`.

- Determine if there are any ports in your network that are restricted. The HP EFS WAN Accelerator automatically forwards traffic on interactive (for example, Telnet and shell) and secure ports (for example, **ssh** and **smtps**). For a complete list of ports automatically forwarded, see Appendix B, "HP EFS WAN Accelerator Ports."

Mounting the HP EFS WAN Accelerator to a Rack

Refer to the instructions that came with your rack kit.

HP ProLiant DL320-510, DL320-1010, and DL320-2010 Hardware

Figure 2-1. HP ProLiant DL320-510, DL320-1010, and DL320-2010 Hardware: Rear Panel

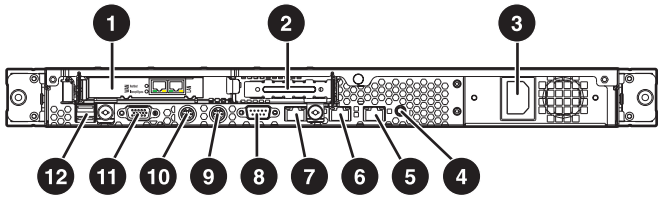


Table 0-1. HP ProLiant DL320-510, DL320-1010, DL320-2010 Hardware Explanation

Item	Description
1	Adlink Gigabit Ethernet Card with fail-through interface
2	PCI-X expansion slot 1, low-profile half-length 64 bit/100 MHz 3.3 V
3	Power supply
4	UID button/LED
5	10/100/1000 NIC 1
6	10/100/1000 NIC 2
7	iLO management port
8	Serial connector
9	Mouse connector
10	Keyboard connector
11	Video connector
12	USB connectors

Figure 2-2. HP ProLiant DL320-510, DL320-1010, and DL320-2010: Front Panel LEDs and Buttons

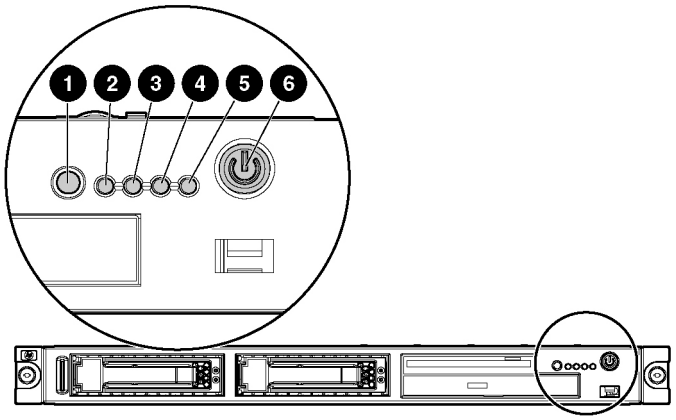


Table 0-2. HP ProLiant DL320-510, DL320-1010, and DL320-2010: Front Panel LEDs and Buttons Explanation

Item	Description	Status
1	UID button/LED	Blue = Identification is activated. Flashing blue = System is being remotely managed. Off = Identification is
2	Internal health LED	Green = System health is normal. Amber = System is degraded. To identify the component in a degraded state, refer to system board LEDs (on page 14). Red = System critical. To identify the component in a critical state, refer to system board LEDs (on page 14). Off = System health is normal (when in standby mode).
3	NIC 1 link/activity LED	Green = Network link exists. Flashing green = Network link and activity exist. Off = No link to network exists.
4	NIC 2 link/activity LED	Green = Network link exists. Flashing green = Network link and activity exist. Off = No link to network exists.
5	Drive activity LED	Green = Drive activity is normal. Amber = Drive failure occurred. Off = No drive activity.

Item	Description	Status
6	Power On/Standby button and system power LED	Green = System is on. Amber = System is shut down, but power is still applied. Off = Power cord is not attached, power supply failure has occurred, no power supplies are installed, facility power is not available, or the DC-to-DC converter is not installed.

HP ProLiant DL380-3010 and DL380-5010 Hardware

Figure 2-3. HP ProLiant DL380-3010 and DL380-5010 Hardware

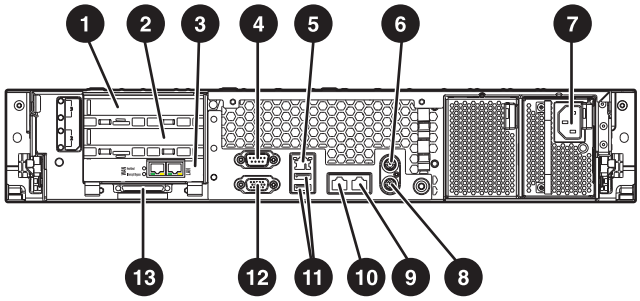


Table 0-3. HP ProLiant DL380-3010 and DL380-5010 Hardware Explanation

Item	Description
1	• PCI-X expansion slot 3, 64-bit/100 MHz, Bus B • Hot-pluggable PCI-X expansion slot 3, 64-bit/100 MHz, Bus B • PCI Express x4 slot 2, Bus B*
2	• PCI-X expansion slot 2, 64-bit/100 MHz, Bus B • Hot-pluggable PCI-X expansion slot 2, 64-bit/100 MHz, Bus B • PCI Express x4 slot 1, Bus A*
3	Adlink Gigabit Ethernet Card with fail-through interface
4	Serial connector
5	iLO management port
6	Mouse connector
7	Power cord connector
8	Keyboard connector
9	NIC 1 connector
10	NIC 2 connector

Item	Description
11	USB connectors
12	Video connector
13	VHDCI SCSI connector (port 1)

* x8 PCI Express cards are supported and will run at x4 speeds.

Figure 2-4. HP ProLiant DL380-3010 and DL380-5010 Front Panel LEDs and Buttons

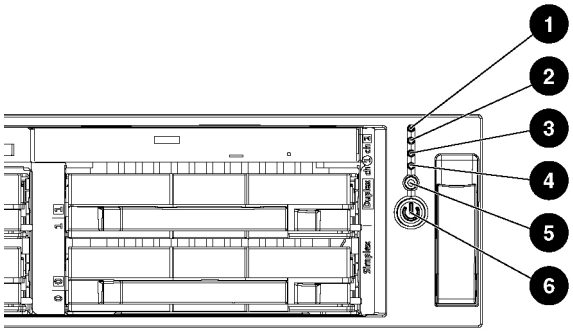


Table 0-4. HP ProLiant DL380-3010 and DL380-5010: Front Panel LEDs and Buttons Explanation

Item	Description	Status
1	Internal health LED	Green = Normal Amber = System degraded. Refer to system board LEDs to identify component in degraded state. Red = System critical. Refer to system board LEDs to identify component in critical
2	External health LED (power	Green = Normal Amber = Power redundancy failure Red = Critical power supply failure 3
3	NIC 1 link/activity LED	Green = Network link Flashing = Network link and activity Off = No link to network. If power is off, view the rear panel RJ-45 LEDs for status
4	NIC 2 link/activity LED	Green = Network link Flashing = Network link and activity Off = No link to network. If power is off, view the rear panel RJ-45 LEDs for status.

Item	Description	Status
5	UID LED button	Blue = Activated Flashing = System being remotely managed Off = Deactivated
6	Power On/Standby button/system power LED	Green = System on Amber = System shut down, but power still applied Off = Power cord not attached or power supply failure

NIC Port LabelingTerminology Note

Labeling for the NIC ports varies on the Riverbed Technology, Inc. Steelhead appliance and the HP ProLiant DL320 and DL380 servers. To avoid confusion, the table below outlines the different labels for the NIC ports.

Product	Label 1	Label 2
Riverbed Technology, Inc. Steelhead appliance	Primary	AUX
HP ProLiant DL320-510, DL320-1010, and DL320-2010	NIC1	NIC2
HP ProLiant DL380-3010 and DL380-5010	1	2

Powering On the HP EFS WAN Accelerator

The following section describes how to connect the Alternating Current (AC) power and how to power on the HP EFS WAN Accelerator.

To power on the HP ProLiant DL320-510, DL320-1010, and DL320-2010

1. Plug the AC power cord into the HP EFS WAN Accelerator (Figure 2-1 on page 21, item 3).
2. Plug the AC power cord into an uninterrupted AC power source .
3. Press the Power On/Standby button on the front of the HP EFS WAN Accelerator (Figure 2-2 on page 22, item 6).
4. Check the status lights on the front and rear of the HP EFS WAN Accelerator.

To power on the HP ProLiant DL380-3010 and DL380-5010

1. Plug the AC power cords into the HP EFS WAN Accelerator (Figure 2-3 on page 23, item 7).
2. Plug the AC power cords into an uninterrupted AC power source.
3. Press the Power On/Standby button on the front of the HP EFS WAN Accelerator (Figure 2-4 on page 24, item 6).
4. Check the status lights on the front and rear of the HP EFS WAN Accelerator.

NOTE: The disk drives take about 2-5 minutes to boot.

HP System Management Homepage v2.0

The HP System Management Homepage v2.0 is a web-based interface that consolidates and simplifies the management of HP ProLiant servers. It provides a secure and intuitive interface to review in-depth hardware configuration and status data, performance metrics, system thresholds and software version control information. Go to the HP System Management Homepage v2.0 for more information.

Integrated Lights-Out

The Integrated Lights-Out (iLO) feature allows remote server management. Refer to the Integrated Lights-Out User Guide that came with the documentation set CD-ROM for your product.

Connecting to the HP EFS WAN Accelerator

To access the configuration wizard and the HP EFS WAN Accelerator command-line interface (CLI), you establish a serial connection using a terminal emulator program.

To connect to the HP StorageWorks Enterprise File Services WAN Accelerator

1. Plug the serial cable into the Console port on the HP EFS WAN Accelerator.
   - For the HP ProLiant DL320-510, DL320-1010, and DL320-2010, refer to refer to Figure 2-1 on page 21, item 8.

- For the HP ProLiant DL380-3010 and DL380-5010, refer to Figure 2-3 on page 23, item 4.

TIP: You can also connect to the HP EFS WAN Accelerator using a crossover cable. Plug a crossover cable into the NIC1 (Primary) port of the HP EFS WAN Accelerator and your laptop computer. If you use this method, you will b e disconnected after changing the primary default IP address (**169.254.169.254**) in the configuration wizard. You must reconnect using the new IP address that you entered and restart the configuration wizard using the **configuration jump-start** command in the CLI.

---

2. Start your terminal emulation program. The terminal device must have the following settings:
   - Baud rate: 9600 bps
   - Data bits: 8
   - Parity: none
   - Stop bits: 1
   - No flow control

NOTE: If you are using the HP EFS WAN Accelerator with a terminal server, the terminal server must use hardware flow control for the port connected to the HP EFS WAN Accelerator.

---

3. Log in as administrator user (`admin`) and enter the default password (`password`). For example:

```
login as: admin
Sent username "admin"
password: password
```

4. Check the system and disk drive status lights.
   - For the HP ProLiant, refer to DL320-510, DL320-1010, and DL320-2010, refer to Figure 2-2 on page 22.
   - For the HP ProLiant DL380-3010 and DL380-5010, refer to Figure 2-4 on page 24.

The HP EFS WAN Accelerator is equipped with the following fail-through cards:

Figure 2-5. Adlink Gigabit-Ethernet (Gig-E) Fail-Through Card

The following table describes the Adlink Gig-E Status Lights

Status Lights	Signal	Description
Intercept/ Bypass	SOLID	Normal State
	OFF	Bypass or Power Off
Heartbeat	ON	Watchdog Time Out
	FLASHING	Watchdog Running
	OFF	Watchdog Disabled

The following table describes the Adlink Gig-E card Light-Emitting Diode (LED) lights.

Status		Left LED (Yellow)	Right LED (Green)
Network Link Not Established		OFF	OFF
10 Mbps (10 Base T)	**Link**	OFF	SOLID (GREEN)
	Active	OFF	FLASHING (GREEN)
100 Mbps (100 Base T)	**Link**	SOLID (YELLOW)	OFF
	Active	FLASHING (YELLOW)	OFF
1000 Mbps (1000 Base T)	**Link**	SOLID (YELLOW)	SOLID (GREEN)
	Active	FLASHING (YELLOW)	FLASHING (GREEN)

After you have established connection, you configure the HP EFS WAN Accelerator using the configuration wizard:

- For in-path configurations, see "Configuring In-Path HP EFS WAN Accelerators," next
- For out-of-path configurations, see "Configuring Out-of-Path HP EFS WAN Accelerators" on page 35.

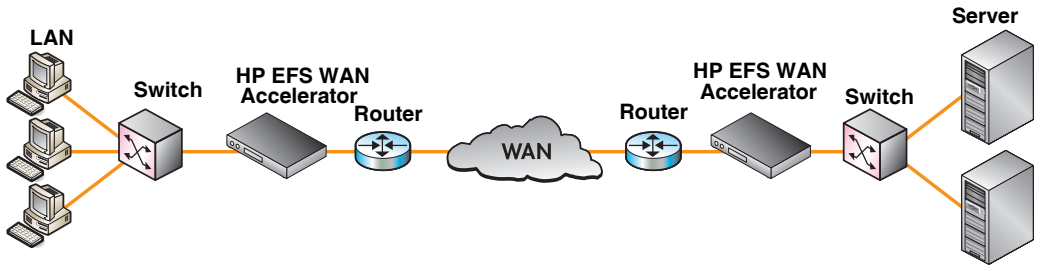
Configuring In-Path HP EFS WAN Accelerators

In an in-path configuration the HP EFS WAN Accelerator is in the direct path between the client and the server. Perform the following procedures on the client-side and server-side HP EFS WAN Accelerators.

Configuring Your Speed and Duplex Settings

Before you begin the configuration process, check the settings on router and switch that your HP EFS WAN Accelerator will be connected to. Make sure the settings on the device and the appliance match (preferably, `100` Mbps or `full` for proper operation). If the settings do not match, optimization might be degraded.

Figure 2-6. In-Path Configuration



To configure the HP StorageWorks Enterprise File Services WAN Accelerator

1. To start the configuration wizard, enter `yes` at the system prompt. For example:

```
Configuration wizard.
Do you want to use the wizard for initial configuration? yes
```

TIP: Press ENTER to enter the default value. Press '?' for help. Press CTRL B to go back to the previous step. If you mistakenly answer `no`, you can restart the configuration wizard by entering **configuration jump-start** at the system prompt.

---

2. To configure the host name for the HP EFS WAN Accelerator, enter the host name at the system prompt. For example:

```
Step 1: Hostname? minna
```

3. You are given the option to enable the Dynamic Host Configuration Protocol (DHCP) to automatically assign an IP address to the primary interface (that is, the HP EFS WAN Accelerator). HP recommends you do not set DHCP. The default value is `no`. For example:

```
Step 2: Use DHCP? no
```

4. To configure the primary interface for the HP EFS WAN Accelerator, enter the IP address you want to assign to the appliance at the system prompt. For example:

```
Step 3: Primary IP address? 10.0.0.74
```

5. To configure the netmask, enter the netmask address at the system prompt. For example:

```
Step 4: Netmask? 255.255.0.0
```

6. To configure the default gateway for the HP EFS WAN Accelerator, enter the IP address at the system prompt. For example:

```
Step 5: Default gateway? 10.0.0.1
```

This value sets the default gateway to your network for optimization, logging, Simple Network Management Protocol (SNMP) traps, and Management Console access.

7. To configure the primary Domain Name Service (DNS), enter the IP address of the DNS server at the system prompt. For example:

```
Step 6: Primary DNS server? 10.0.0.2
```

8. To configure the domain name for the system, enter the domain name at the system prompt. For example:

```
Step 7: Domain name? mydomain.com
```

If you configure a domain name, you can enter host names in the system without the domain name.

9. To assign a new password to the administrator user (`admin`), type a password at the system prompt. For example:

```
Step 8: Admin password? xxxyyy
```

HP strongly recommends that you change the default password at this time. The password must be minimum of 6 characters. The default administrator password is `password`.

10. If you have already configured another HP EFS WAN Accelerator, you are given the option to copy your configuration settings to this appliance. To copy configuration settings, type `yes` at the system prompt. If you do not need to copy a configuration, type `no` at the system prompt. For example:

```
Step 9: Copy config from another site? no
```

11. To set the speed on the primary interface (that is, the HP EFS WAN Accelerator), type a value at the system prompt. Make sure the value matches the settings on your router or switch. The default value is `auto`. For example:

```
Step 10: Set the primary interface speed? [auto] 100
```

12. To set the duplex mode on the primary interface, type a value at the system prompt. Make sure the value matches the settings on your router or switch. The default value is `auto`. For example:

```
Step 11: Set the primary interface duplex? [auto] full
```

13. To configure in-path support, enter `yes` at the system prompt. An in-path configuration is a configuration in which the HP EFS WAN Accelerator is in the direct path of the client and server. For example:

```
Step 12: Would you like to activate the in path configuration? yes
```

For detailed information about in-path configurations and why you would use them, see "In-Path Deployments" on page 46.

14. Enter the in-path IP address for the HP EFS WAN Accelerator at the system prompt. For example:

```
Step 13: In Path IP address? 10.0.0.100
```

15. Enter the in-path netmask address at the system prompt. For example:

```
Step 14: In Path Netmask? 255.255.255.0
```

16. Enter the in-path default gateway (the WAN gateway) at the system prompt. For example:

```
Step 15: In-Path Default Gateway? 10.0.0.4
```

17. To set the in-path, local area network (LAN) interface speed, type a value at the system prompt. Make sure the value matches the settings on your router or switch. The default value is `auto`. For example:

```
Step 16: Set the in-path:LAN interface speed? [auto] 100
```

18. To set the in-path, LAN duplex speed, type a value at the system prompt. Make sure the value matches the settings on your router or switch. The default value is `auto`. For example:

```
Step 17: Set the in-path:LAN interface duplex? [auto] full
```

19. To set the in-path, WAN interface speed, type a value at the system prompt. Make sure the value matches the settings on your router or switch. The default value is `auto`. For example:

```
Step 18: Set the in-path:WAN interface speed? [auto] 100
```

20. To set the in-path, WAN duplex speed, type a value at the system prompt. Make sure your setting matches the setting on your router or switch. The default value is **auto**. For example:

```
Step 19: Set the in-path:WAN interface duplex? [auto] full
```

21. The system confirms your settings.

```
You have entered the following information:

   1. Hostname: minna
   2. Use DHCP: no
   3. Primary IP address: 10.0.0.74
   4. Netmask: 255.255.0.0
   5. Default gateway: 10.0.0.1
   6. Primary DNS server: 10.0.0.2
   7. Domain name: mydomain.com
   8. Admin password: (unchanged)
   9. Copy config from another site: no
   10. Set the primary interface speed: 100
   11. Set the primary interface duplex: full
   12. Would you like to activate the in-path configuration: no
   13. In-Path IP address: 10.0.0.100
   14. In-Path Netmask: 255.255.0.0
   15. In-Path Default gateway: 10.0.0.4
   16. Set the in-path:LAN interface speed: 100
   17. Set the in-path:LAN interface duplex: full
   18. Set the in-path:WAN interface speed: 100
   19. Set the in-path:WAN interface duplex: full

To change an answer, enter the step number to return to.
Otherwise hit <enter> to save changes and exit.
```

```
Choice:
```

The HP EFS WAN Accelerator configuration wizard automatically saves your configuration settings.

22. To log out of the system, enter the following command at the system prompt:

```
# exit
```

Connecting the HP EFS WAN Accelerator to Your Network

You use CAT-5E straight-through and crossover cables to connect to your network in an in-path configuration. Make sure you use the correct cables to establish your network connections:

- **Straight-through cables**. Use straight-through cables to connect the NIC1 (Primary) and LAN ports on the HP EFS WAN Accelerator to the LAN switch
- **Crossover cable**. Use the crossover cable to connect the WAN port on the HP EFS WAN Accelerator to the WAN router

To connect the HP EFS WAN Accelerator to your network

1. Plug the straight-through cable into the NIC1 (Primary) port of the HP EFS WAN Accelerator and the LAN switch. (This can be any port on your LAN switch that acts as a host.)
   - For the HP ProLiant DL320-510, DL320-1010, and DL320-2010, refer to Figure 2-1 on page 21, item 5.
   - For the HP ProLiant DL380-3010 and DL380-5010, refer to Figure 2-3 on page 23, item 9.
2. Unplug the WAN router cable that connects to your LAN switch.

Figure 2-7. Disconnecting the WAN Router

3. Plug the cable you unplugged into the WAN port of the HP StorageWorks Enterprise File Services WAN Accelerator and the WAN router. (This must be a crossover cable.)
   - For the HP ProLiant DL320-510, DL320-1010, and DL320-2010, refer to Figure 2-1 on page 21, item 1. For a detailed view, refer to Figure 2-5 on page 27.
   - For the HP ProLiant DL380-3010 and DL380-5010, refer to Figure 2-3 on page 23, item 3. For a detailed view, refer to Figure 2-5 on page 27.
4. Plug the straight-through cable into the LAN port of the HP EFS WAN Accelerator and the LAN switch.
   - For the HP ProLiant DL320-510, DL320-1010, and DL320-2010, refer to Figure 2-1 on page 21, item 1. For a detailed view, refer to Figure 2-5 on page 27.
   - For the HP ProLiant DL380-3010 and DL380-5010, refer to Figure 2-3 on page 23, item 3. For a detailed view, refer to Figure 2-5 on page 27.

You can now optimize WAN traffic using the HP EFS WAN Accelerator.

Verifying Your Connections

Perform the following tasks to verify that you have properly connected the HP EFS WAN Accelerator.

To verify your connections

1. Verify that you can connect to the HP EFS WAN Accelerator CLI using one of the following devices:
   - An ASCII terminal or emulator that can connect to the serial console. It must have the following settings: 9600 baud, 8 bits, no parity, 1 stop bit, and no flow control.
   - A computer with a Secure Shell (**ssh**) client that is connected to the HP EFS WAN Accelerator NIC1 (Primary) port.
2. At the system prompt, enter the following command:

```
ssh admin@host.domain
```

   or

```
ssh admin@ipaddress
```

3. You are prompted for the administrator password. This is the password you set in the configuration wizard.
4. At the system prompt, **ping** from the management interface.

```
ping -I <primary-IP-address> <primary-default-gateway>
```

5. At the system prompt, **ping** from the in-path default gateway.

```
ping -I <in-path-IP-address> <in-path-default-gateway>
```

Connecting to the Management Console

After you configure the HP EFS WAN Accelerator, you can check and modify your configuration settings, and view performance reports and system logs in the Management Console. You can connect to the Management Console through any supported Web browser.

To connect to the Management Console you must know the host, domain, and administrator password that you assigned during the initial setup of the HP EFS WAN Accelerator.

NOTE: Cookies and Javascript must be enabled in your Web browser.

To connect to the Management Console

1. Enter the URL for the Management Console in the location box of your Web browser:

protocol://*host.domain*

protocol is **http** or **https**. HyperText Transport Protocol Secure (HTTPS) uses the Secure Sockets Layer (SSL) protocol to ensure a secure environment. If you use HTTPS to connect you are prompted to inspect and verify the SSL key.

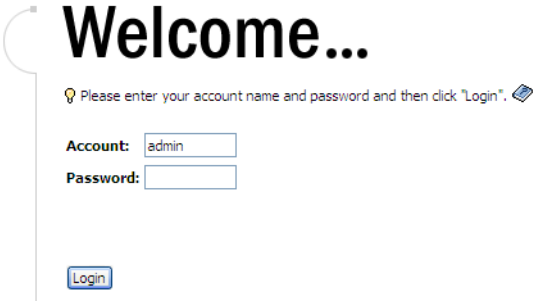
host is the host name you assigned to the HP EFS WAN Accelerator during initial configuration. If your DNS server maps that IP address to a name, you can specify the DNS name.

domain is the full domain name for the HP EFS WAN Accelerator.

NOTE: Alternatively, you can specify the IP address instead of the host and domain. For example: **http://169.254.169.254/**.

The Management Console appears, displaying the Welcome page.

Figure 2-8. Welcome Page



2. In the **Account** text box, type the user login: **admin**, **monitor**, a login from a Remote Authentication Dial-In User Service (RADIUS), or a Terminal Access Controller Access Control System (TACACS+) database. The default login is **admin**.

   Users with administrator (**admin**) privileges can configure and administer the HP EFS WAN Accelerator. Users with monitor (**monitor)** privileges can view connected HP EFS WAN Accelerators and reports.

3. In the **Password** text box, type the password you assigned in the configuration wizard.

4. Click **Login** to display the Home: Welcome page. The Home: Welcome page summarizes the current performance of your system and provides links to system logs and HP technical support.

Verifying Your Configuration

Perform the following tasks to verify that you have properly configured the HP EFS WAN Accelerator.

If you selected auto-negotiation (`auto`) for your in-path and primary interfaces, you must make sure that the HP EFS WAN Accelerator negotiated the speed and duplex at the rate that your devices expect (for example, `100` and `full` for proper operation to occur). You can verify your speed and duplex settings in the Management Console Reports.

To verify your speed and duplex settings

1. In the Management Console, click **Logging** to display the Logging: View System Logs page.
2. Check for duplex and speed errors in the system logs (for example, `crc` and `frame` errors).
3. Click **Reports** to display the Reports: Bandwidth Optimization page.
4. In the left menu, click **Network Interfaces** to display the Reports: Network Interfaces Statistics page.
5. Check the speed and duplex settings on your LAN and WAN interface. To modify your settings, go to the Setup: Networking, Names & Interfaces page.

To verify optimization in an in-path configuration

1. Mount a drive on the client machine.
2. Drag and drop a 1 MB file.
3. Drag and drop the 1 MB file again. Performance improves significantly.

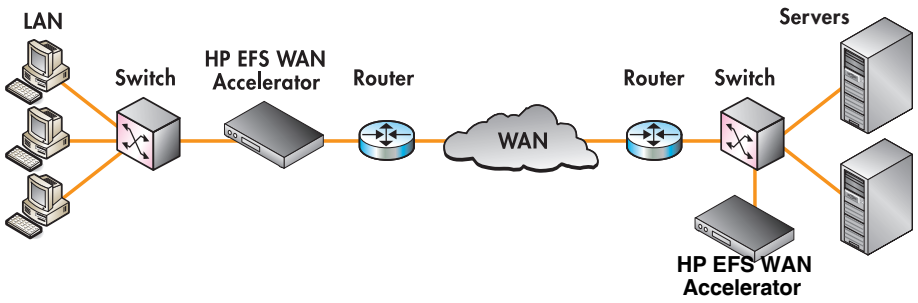
Configuring Out-of-Path HP EFS WAN Accelerators

In an out-of-path configuration, the client-side HP EFS WAN Accelerator is configured as an in-path interface and the server-side, HP EFS WAN Accelerator is configured as an out-of-path interface.

Configuring Your Speed and Duplex Settings

Before you begin the configuration process, check the settings on router and switch that your HP EFS WAN Accelerator will be connected to. Make sure the settings on the device and the HP EFS WAN Accelerator match (preferably, `100` Mbps or `full` for proper operation). If the settings do not match, optimization might be degraded.

Figure 2-9. Out-of-Path Configuration



Configuring the Server-Side Appliance

You use the configuration wizard to configure an out-of-path HP EFS WAN Accelerator.

To configure the server-side HP EFS WAN Accelerator

1. To start the configuration wizard, enter `yes` at the system prompt. For example:

```
Configuration wizard.
Do you want to use the wizard for initial configuration? yes
```

TIP: Press ENTER to enter the default value. Press '?' for help. Press CTRL B to go back to the previous step. If you mistakenly answer `no`, you can start the configuration wizard by entering **configuration jump-start** at the system prompt.

---

2. To configure the host name for the HP EFS WAN Accelerator, enter the host name at the system prompt. For example:

```
Step 1: Hostname? minna
```

3. You are given the option to enable the Dynamic Host Configuration Protocol (DHCP) to automatically assign an IP address to the primary interface (that is, the HP EFS WAN Accelerator). HP recommends you do not set DHCP. The default value is `no`. For example:

```
Step 2: Use DHCP? no
```

4. To configure the primary interface for the HP EFS WAN Accelerator, enter the IP address you want to assign to the appliance at the system prompt. For example:

```
Step 3: Primary IP address? 10.0.0.74
```

5. To configure the netmask, enter the netmask address at the system prompt. For example:

```
Step 4: Netmask? 255.255.0.0
```

6. To configure the default gateway for the HP EFS WAN Accelerator, enter the IP address at the system prompt. For example:

```
Step 5: Default gateway? 10.0.0.1
```

   This value sets the default gateway to your network for optimization, logging, Simple Network Management Protocol (SNMP) traps, and Management Console access.

7. To configure the primary Domain Name Service (DNS), enter the IP address of the DNS server at the system prompt. For example:

```
Step 6: Primary DNS server? 10.0.0.2
```

8. To configure the domain name for the system, enter the domain name at the system prompt. For example:

```
Step 7: Domain name? mydomain.com
```

If you configure a domain name, you can enter host names in the system without the domain name.

9. To assign a new password to the administrator user (`admin`), type a password at the system prompt. For example:

```
Step 8: Admin password? xxxyyy
```

HP strongly recommends that you change the default password at this time. The password must be minimum of 6 characters. The default administrator password is `password`.

10. If you have already configured another HP EFS WAN Accelerator, you are given the option to copy your configuration settings to this appliance. To copy configuration settings, type `yes` at the system prompt. If you do not need to copy a configuration, type `no` at the system prompt. For example:

```
Step 9: Copy config from another site? no
```

11. To set the speed on the primary interface (that is, the HP EFS WAN Accelerator), type a value at the system prompt. Make sure the value matches the settings on your router or switch. The default value is `auto`. For example:

```
Step 10: Set the primary interface speed? 100
```

12. To set the duplex mode on the primary interface, type a value at the system prompt. Make sure the value matches the settings on your router or switch. The default value is `auto`. For example:

```
Step 11: Set the primary interface duplex? [auto] full
```

13. You are given the option to activate in-path support. Type `no` at the system prompt. For example:

```
Step 12: Would you like to activate the in path configuration? no
```

14. To activate an out-of-path configuration, type `yes` at the system prompt. For example:

```
Step 13: Would you like to activate the out-of-path configuration? [no]
yes
```

The system confirms your settings.

```
You have entered the following information:

   1. Hostname: minna
   2. Use DHCP: no
   3. Primary IP address: 10.0.0.74
   4. Netmask: 255.255.0.0
   5. Default gateway: 10.0.0.1
   6. Primary DNS server: 10.0.0.2
   7. Domain name: mydomain.com
   8. Admin password: (unchanged)
   9. Copy config from another site: no
   10. Set the primary interface speed: 100
   11. Set the primary interface duplex: full
   12. Would you like to activate the in-path configuration: no
   13: Would you like to activate the out-of-path configuration? yes
```

```
To change an answer, enter the step number to return to.
Otherwise hit <enter> to save changes and exit.

Choice:
```

The HP EFS WAN Accelerator configuration wizard automatically saves your configuration settings.

15. To log out of the system, enter the following command at the system prompt:

```
# exit
```

Connecting the HP EFS WAN Accelerator to Your Network

You use a CAT-5E straight-through cable to connect the NIC1 (Primary) port of the HP EFS WAN Accelerator to the LAN switch in an out-of-path configuration.

To connect the HP EFS WAN Accelerator to your network

Plug the straight-through cable into the NIC1 (Primary) port of the HP EFS WAN Accelerator and the LAN switch. (This can be any port on your LAN switch that acts as a host.)

- For the HP ProLiant DL320-510, DL320-1010, and DL320-2010, refer to Figure 2-1 on page 21, item 5.
- For the HP ProLiant DL380-3010 and DL380-5010, refer to Figure 2-3 on page 23, item 9.

Configuring the Client-Side HP EFS WAN Accelerator

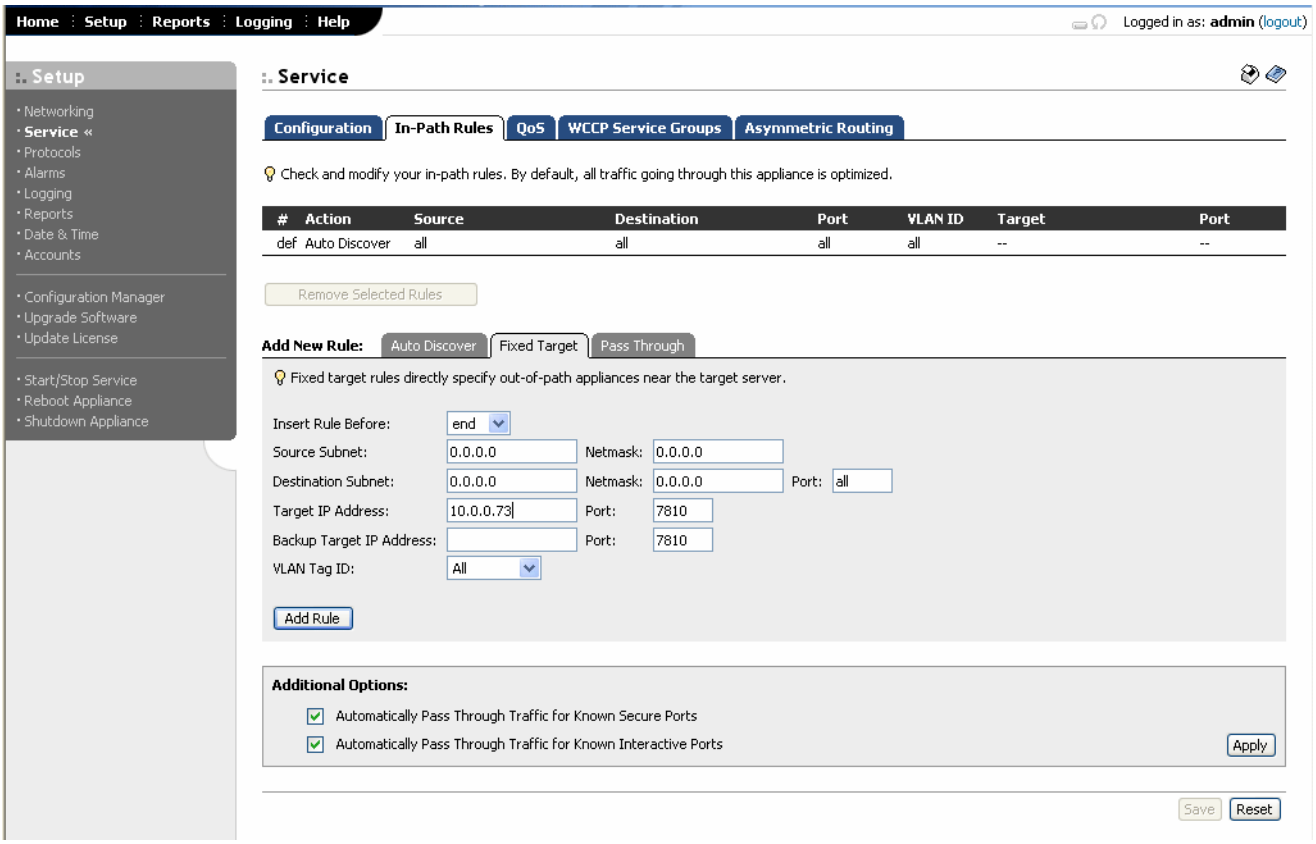
In an out-of-path configuration, you configure the client-side, HP EFS WAN Accelerator in the same way as an in-path configuration. For optimization to occur, you must define a fixed-target rule on the client-side HP EFS WAN Accelerator that points to the out-of-path, server-side HP EFS WAN Accelerator. You can define fixed-target rules using the Management Console or the HP EFS WAN Accelerator command-line interface.

For detailed information about the Management Console, see the *HP EFS WAN Accelerator Management Console User's Guide*.

To configure the client-side HP StorageWorks Enterprise File Services WAN Accelerator

1. Follow the procedures for an in-path configuration. For details, see "Configuring In-Path HP EFS WAN Accelerators" on page 28.
2. Connect to the Management Console. For details, see "Connecting to the Management Console" on page 33.
3. Navigate to the Setup: Service, In Path Rules, Fixed Target page.

Figure 2-10. Setup: Service, In Path Rules, Fixed Target Page



4. Type the out-of-path, server-side, HP EFS WAN Accelerator IP address and port in the **Target IP Address** and **Port** text boxes.
5. Click **Save** to write your settings to memory or click **Reset** to return the settings to their previous values.

You can check and modify your configuration settings in the Management Console. For detailed information, see the *HP EFS WAN Accelerator Management Console User's Guide*.

For detailed information about verifying your connections and configuration settings, see "Verifying Your Connections" on page 33 and "Verifying Your Configuration" on page 34.

You can now optimize WAN traffic using the HP EFS WAN Accelerator.

SMB Signing and Windows Performance

The Common Internet File System (CIFS) protocol, used by Windows operating systems for file and print sharing, is based on the Server Message Block (SMB) protocol. To prevent security assaults that might modify transmissions, the SMB protocol supports signing all transmitted SMB packets. By default, Domain Controllers that also act as file servers have signing enabled.

SMB signing prevents the HP EFS WAN Accelerator from applying full optimization on CIFS connections and significantly reduces the performance gain of an HP EFS WAN Accelerator deployment. As many customers take additional security precautions (such as firewalls, internal-only reachable servers, and so forth), the SMB signing adds little additional security, at a significant performance cost (even without HP EFS WAN Accelerators).

SMB signing is a performance intensive operation for clients and servers. Hence this feature is not turned on all the time. This feature is negotiated between the client and the server.

NOTE: For detailed information about the performance impact of SMB signing, see the Microsoft support site at: **http://www.microsoft.com/technet/treeview/default.asp?url=/technet/prodtechnol/windowsserver2003/proddocs/datacenter/570.asp**. SMB signing was enabled on Windows 2000, Service Pack 3, Critical fix Q329170.

You can disable SMB signing using one of the following approaches:

- "Disabling SMB Signing Using Active Directory," next
- "Enabling the Secure-CIFS Feature" on page 43

Disabling SMB Signing Using Active Directory

To disable SMB signing you must revise the default SMB registry parameters. SMB signing is controlled by the following registry parameters:

```
enablesecuritysignature (SSEn)
requiresecuritysignature (SSReq)
```

The registry settings are located in:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\l
anmanserver\parameters
```

The following table summarizes the default the SMB signing registry parameters.

Machine Role	SSEn	SSReq
Client/Workstation	ON	OFF
Member Server	OFF	OFF
Domain Controller	ON	ON

With these default registry parameters, SMB signing is negotiated in the following manner:

- SMB/CIFS exchanges between the Client/Workstation and the Member Server are not signed.
- SMB/CIFS exchanges between the Client/Workstation and the Domain Controller are always signed.

The following table lists the revised SMB registry parameters that ensure full optimization (that is, bandwidth and latency optimization) with the HP EFS WAN Accelerator.

Number	Client/Workstation		Member Server		Results
	SSEn	SSReq	SSEn	SSReq	
1	OFF	OFF	OFF	OFF	Signature Disabled: Full Optimization
2	OFF	OFF	ON	OFF	Signature Disabled: Full Optimization
3	ON	OFF	OFF	OFF	Signature Disabled: Full Optimization

There are two sets of these parameters on each computer: one set for the computer as a server and the other set for the computer as a client.

NOTE: On the client, if SMB signing is set to required, do not disable it on the server.

To disable SMB signing on Windows 2000 domain controllers, member servers, and clients

1. Open Active Directory Users and Computers on the domain controller.
2. Right click Domain Controllers and select **Properties**.
3. Click the Group Policy tab.
4. Click **Default Domain Controllers Policy** and select **Edit**.
5. Click **Default Domain Controllers Policy/Computer Configuration/ Windows Settings/Security Settings/Local Policies/Security Options**.
6. Disable **Digitally sign client communication (always)** and **Digitally sign server communication (always)**.
7. Disable **Digitally sign client communication (when possible)** and **Digitally sign server communication (when possible)**.
8. Reboot all the domain controllers and member servers that you want to optimize.

To disable SMB signing on Windows 2003 domain controllers, member servers, and clients

1. Open Active Directory Users and Computers on the domain controller.
2. Right click Domain Controllers and select **Properties**.
3. Click the Group Policy tab.
4. Click **Default Domain Controllers Policy** and select **Edit**.
5. Click **Default Domain Controllers Policy/Computer Configuration/ Windows Settings/Security Settings/Local Policies/Security Options**.
6. Disable **Microsoft Network Server: digitally sign communications (always)** and **Microsoft Network Server: digitally sign communications (if client agrees)**.
7. Disable **Microsoft Network Client: digitally sign client communication (always)** and **Microsoft Network client: digitally sign server communications (if server agrees)**.
8. Reboot all the domain controllers and member servers that you want to optimize.

You can verify that SMB signing has been disabled on your domain controllers, member servers, and clients. The following procedures assume that you have installed and configured the HP EFS WAN Accelerators in your network.

To verify that SMB signing has been disabled

1. Copy a couple of files from the server to the client through the HP EFS WAN Accelerators.
2. View the server-side HP EFS WAN Accelerator logs in the Logging: View System Logs page of the Management Console. The following warning messages indicate that the SMB security signatures are still enabled:

```
SMB_SHUTDOWN_ERR_SEC_SIG_ENABLED
SMB_SHUTDOWN_ERR_SEC_SIG_REQUIRED
```

3. Repeat Step 6 and Step 7 in "To disable SMB signing on Windows 2000 domain controllers, member servers, and clients" on page 42.

Enabling the Secure-CIFS Feature

Secure-CIFs enables you to automatically disable SMB signing using an HP EFS WAN Accelerator CLI command.

By default the Secure-CIFS feature is disabled. When a Windows server is set to **SecuritySignatureEnable**, the HP EFS WAN Accelerator stops CIFS optimization but continues performing HP EFS WAN Accelerator optimization.

If you enable Secure-CIFS using the HP EFS WAN Accelerator CLI command **secure-sig-opt**, the HP EFS WAN Accelerator performs CIFS optimization for connections even when the **SecuritySignatureEnable** setting is specified.

IMPORTANT: The HP EFS WAN Accelerator does not optimize traffic if the **SecuritySignatureRequired** setting is specified on the server.

Before you enable Secure-CIFS, you must consider the following factors:

- If the client-side machine has **Required** signing, enabling secure-CIFS prevents the client from connecting to the server.
- If the server-side machine has **Required** signing, they connect but you cannot perform full latency optimization with the HP EFS WAN Accelerator. Domain controllers default to **Required**.

You can identify poor CIFS performance by the examining the HP EFS WAN Accelerator log files in the Management Console.

Client-side HP EFS WAN Accelerator:

```
Jan 22 00:01:11 dfcfe1 sport[3940]: [smbcfe.WARN] 728 {10.0.0.14:1605
10.0.0.4:445} Cifs parser shutting down due to
error=SMB_SHUTDOWN_ERR_SEC_SIG_ENABLED. Security signatures are enabled
on the server. Disabling latency optimization, only bandwidth will be
optimized.
```

Server-side HP EFS WAN Accelerator:

```
Jan 22 00:04:49 dfcfe1 sport[3940]: [smbcfe.WARN] 733 {10.0.100.86:4688
10.0.0.4:445} Received cifs shutdown request from SFE:
error=SMB_SHUTDOWN_ERR_SEC_SIG_ENABLED
```

To enable Secure-CIFS

1. Connect to the HP EFS WAN Accelerator CLI. For detailed information, see the *HP EFS WAN Accelerator Command-Line Interface Reference Manual*.
2. Enter configuration mode. At the system prompt enter the following set of commands:

```
minna> enable
minna # configure terminal
```

```
minna (config) #
```

3. At the system prompt, enter the following command:

```
minna (config)# protocol cifs secure-sig-opt enable
```

CHAPTER 3 Advanced Network Deployments

In This Chapter

This chapter provides an overview of advanced network deployments and summarizes the basic steps for configuring them. This chapter includes the following sections:

This chapter assumes you are familiar with the HP EFS WAN Accelerator Management Console (Management Console). For detailed information about the Management Console and how to use it, see the *HP EFS WAN Accelerator Management Console User's Guide*.

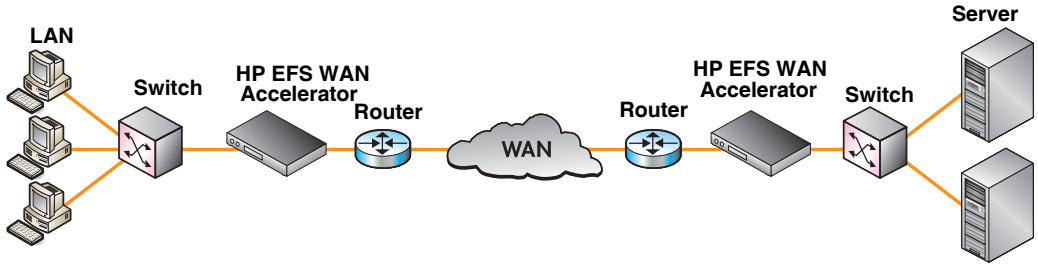
This chapter provides the basic steps for advanced network deployments. It does not provide detailed procedures. Use this chapter as a general guide to these deployments. If you need additional assistance, contact HP Technical Support located at **http://www.hp.com**.

For detailed information about the factors you must consider before you design and deploy the HP EFS WAN Accelerator in a network environment, see "Design and Deployment Overview" on page 17.

In-Path Deployments

The following section describes in-path network configurations where the HP EFS WAN Accelerator is located in the direct path of the client, server, and Wide Area Network (WAN).

Figure 3-1. In-Path, Client and Server-Side Deployment

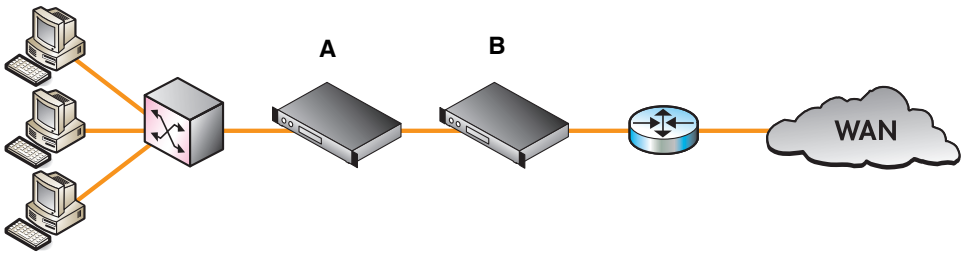


In-Path, Failover Support

An in-path, fail-over support deployment serves offices with one WAN routing point and where failover support is required. This deployment is cost effective, simple to manage, and continues to optimize data if there is an error in the system.

The following figure illustrates the client-side of the network where redundant HP EFS WAN Accelerators are deployed to provide optimization of data.

Figure 3-2. In-Path, Failover Deployment



Basic Steps (Client-Side)

Perform the following steps for each client-side HP EFS WAN Accelerator.

1. Configure the HP EFS WAN Accelerator in an in-path configuration. For details see, "Configuring In-Path HP EFS WAN Accelerators" on page 28.

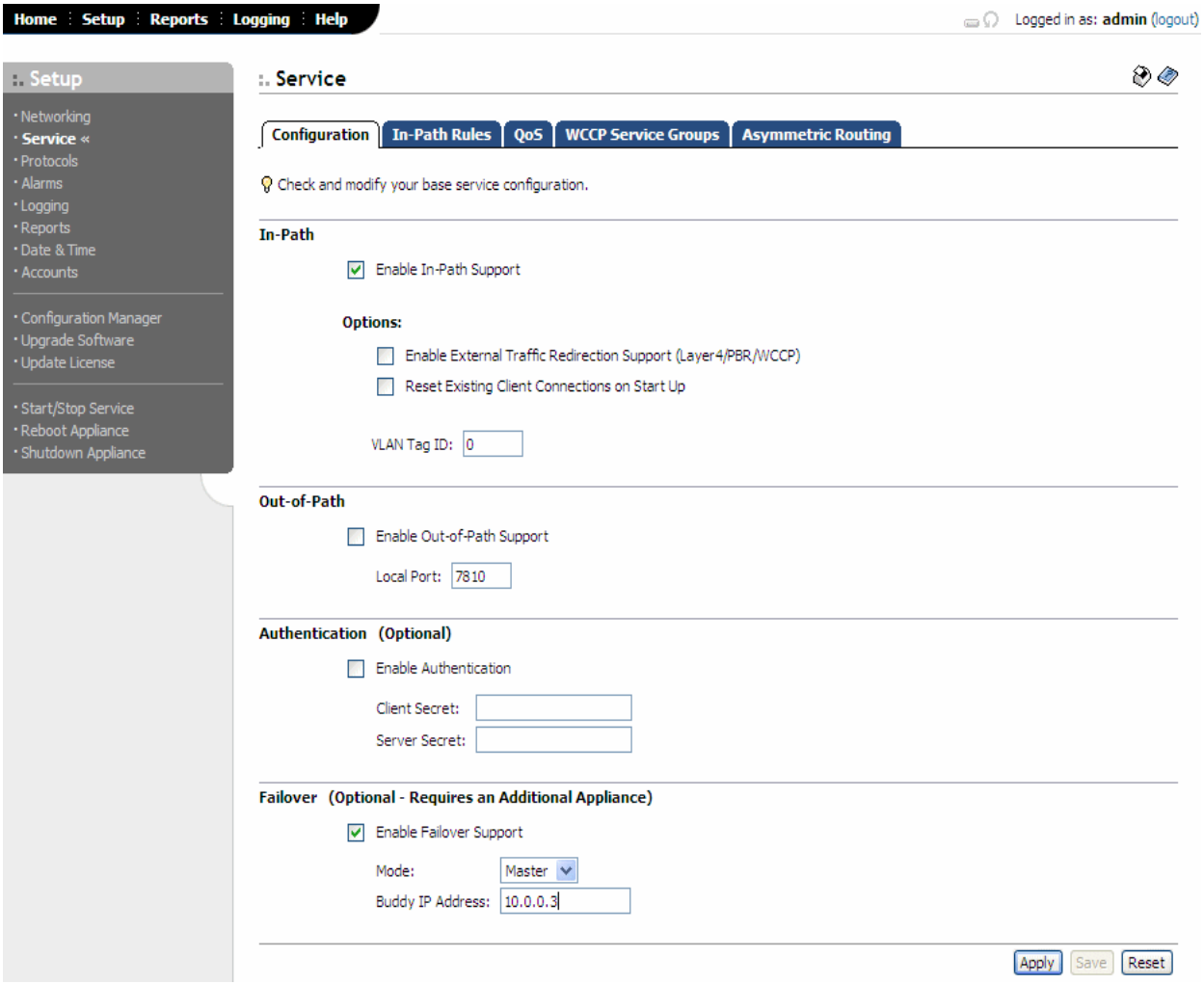
2. Connect to the Management Console. For details see, "Connecting to the Management Console" on page 33.

3. Enable failover support in the Setup: Service, Configuration page of the Management Console. For example:

   - On HP EFS WAN Accelerator A: specify HP EFS WAN Accelerator A as the *master* and specify the Internet Protocol (IP) address of HP EFS WAN Accelerator B as the *buddy* IP address.

- On HP EFS WAN Accelerator B: specify HP EFS WAN Accelerator B as the *backup* and specify the IP address of HP EFS WAN Accelerator A as the *buddy* IP address.

Figure 3-3. Management Console Setup: Service, Configuration Page



4. Apply and save the new configuration in the Management Console.

5. Begin optimization. View performance reports and system logs in the Management Console.

Basic Steps (Server-Side)

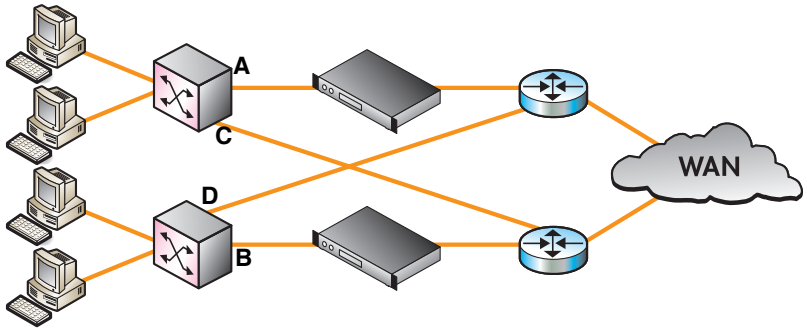
The server-side HP EFS WAN Accelerator is configured as an in-path device. For detailed information, see "Configuring In-Path HP EFS WAN Accelerators" on page 28.

In-Path, Two Routing Points

An in-path, two routing point deployment serves offices with two WAN routing points and redundant HP EFS WAN Accelerators. This deployment is simple to manage, provides failover support, and load balances traffic. You must configure the Interior Gateway Protocol (IGP) to prefer HP EFS WAN Accelerator links over non-HP EFS WAN Accelerator links for load balancing to occur and to avoid asymmetric routing.

The following figure illustrates the client-side of the network where two in-path HP EFS WAN Accelerators are configured as in-path interfaces.

Figure 3-4. In-Path, Two Routing Points Deployment



Basic Steps (Client-Side)

Perform the following steps on each client-side HP EFS WAN Accelerator.

1. Configure the HP EFS WAN Accelerator in an in-path configuration. For details see, "Configuring In-Path HP EFS WAN Accelerators" on page 28.
2. Connect to the Management Console to verify your configuration. For details see, "Connecting to the Management Console" on page 33.
3. Configure your Interior Gateway Protocol (IGP) to prefer links A and B over links C and D.
4. Begin optimization. View performance reports and system logs in the Management Console.

Basic Steps (Server-Side)

The server-side HP EFS WAN Accelerator is configured as an in-path device. For detailed information, see "Configuring In-Path HP EFS WAN Accelerators" on page 28.

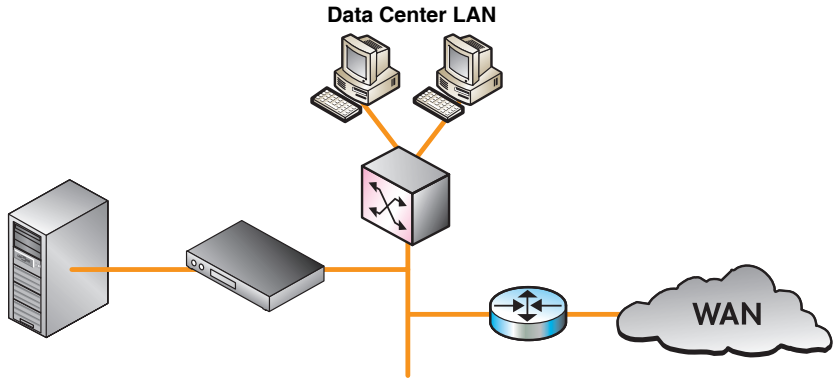
In-Path, Server-Side

An in-path, server-side deployment serves a single server or server subnet. This deployment is simple to manage and LAN traffic is passed-through. It does not provide failover support if there is an error in the system.

This deployment is useful in environments where most of the server-side traffic is out-of-path but there are applications that originate on the server-side that require optimization (for example, backup software, software distribution suites, or other similar applications).

The following figure illustrates a server-side subnet where the HP EFS WAN Accelerator is deployed to provide data center clients with optimized data.

Figure 3-5. In-Path, Server-Side Deployment



Basic Steps (Client-Side)

The client-side HP EFS WAN Accelerator is configured as an in-path device. For detailed information, see "Configuring In-Path HP EFS WAN Accelerators" on page 28.

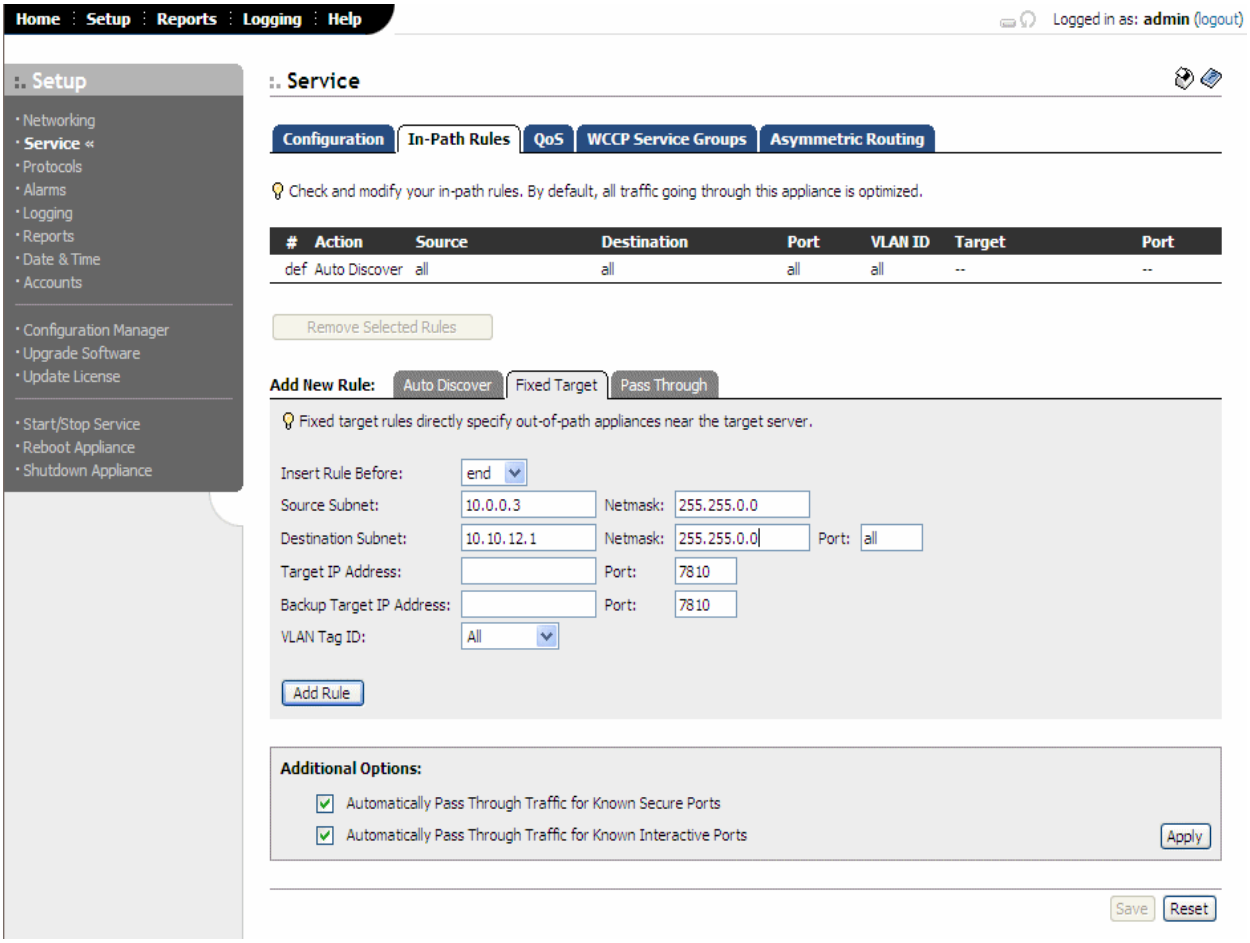
Basic Steps (Server-Side)

Perform the following steps on the server-side HP EFS WAN Accelerator.

1. Configure the HP EFS WAN Accelerator in an in-path configuration. For details see, "Configuring In-Path HP EFS WAN Accelerators" on page 28.

2. Define in-path, fixed-target rules for traffic you want to optimize. For detailed information about in-path rules and configuring them, see the *HP EFS WAN Accelerator Management Console User's Guide*.

Figure 3-6. Management Console Setup: Service, In-Path Rules, Fixed Target Page



3. Connect to the Management Console to verify your configuration. For details see, "Connecting to the Management Console" on page 33.

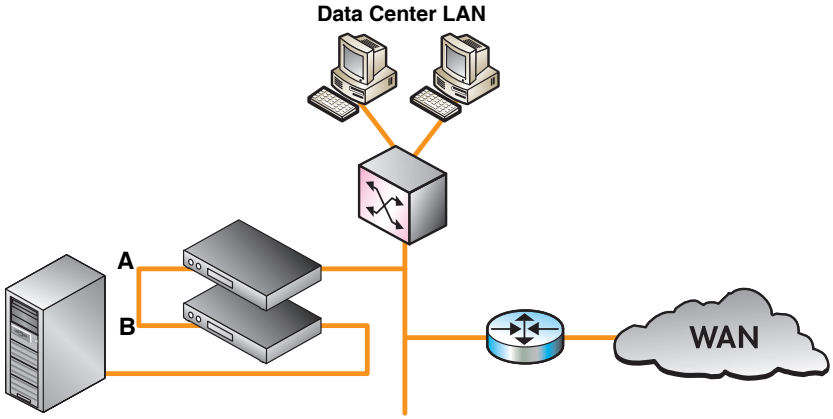
4. Begin optimization. View performance reports and system logs in the Management Console.

In-Path, Server-Side, 1:1

An in-path, server-side, 1:1 deployment is appropriate for data center LANs where you want to optimize applications on a single server or server subnet. This deployment is simple to manage and LAN traffic is passed-through. It accelerates one server with 100 Mbps of WAN traffic.

The following figure illustrates the server-side of the network.

Figure 3-7. In-Path, Server-Side, 1:1 Deployment



Basic Steps (Client-Side)

The client-side HP EFS WAN Accelerator is configured as an in-path device. For detailed information, see "Configuring In-Path HP EFS WAN Accelerators" on page 28.

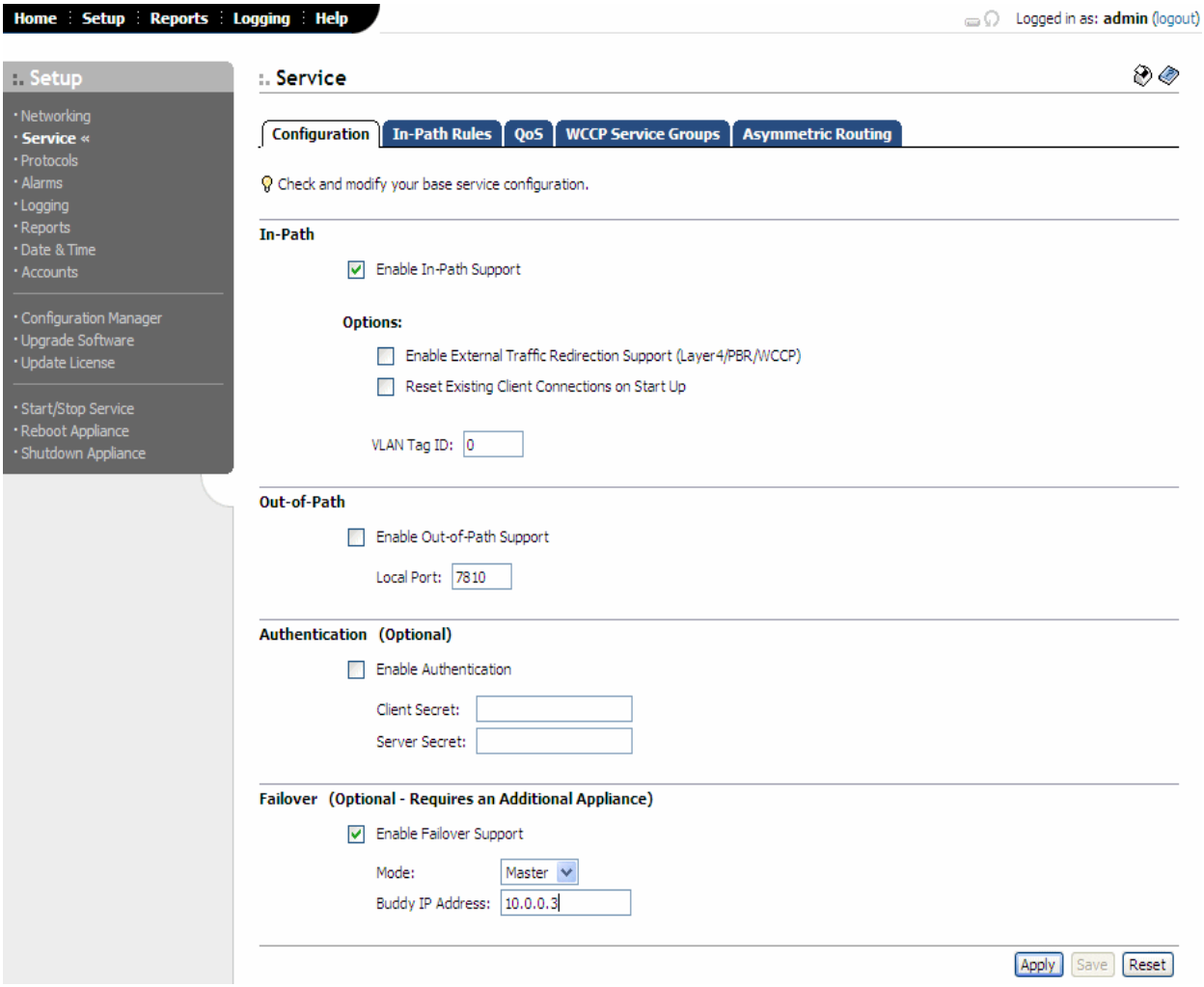
Basic Steps (Server-Side)

Perform the following steps for each of the server-side HP EFS WAN Accelerators.

1. Configure the HP EFS WAN Accelerator in an in-path configuration. For details see, "Configuring In-Path HP EFS WAN Accelerators" on page 28.
2. Connect to the Management Console to verify your configuration. For details see, "Connecting to the Management Console" on page 33.
3. Enable failover support in the Setup: Service, Configuration page of the Management Console. For example:
   - On HP EFS WAN Accelerator A: specify HP EFS WAN Accelerator A as the *master* and specify the IP address of HP EFS WAN Accelerator B as the *buddy* IP address.

- On HP EFS WAN Accelerator B: specify HP EFS WAN Accelerator B as the *backup* and specify the IP address of HP EFS WAN Accelerator A as the *buddy* IP address.

Figure 3-8. Management Console Setup: Service, Configuration Page



4. Apply and save the new configuration in the Management Console.

5. Begin optimization. View performance reports and system logs in the Management Console.

In-Path, Load Balanced, Layer-4 Switch

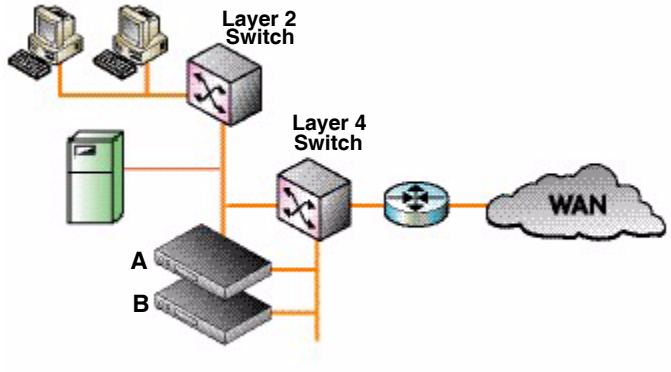
An in-path, load-balanced, Layer-4 switch deployment serves high traffic environments or environments with large numbers of active TCP connections. It handles failures, scales easily, and supports all protocols.

When you configure the HP EFS WAN Accelerator using a Layer-4 switch, you define the HP EFS WAN Accelerators as a pool where the Layer-4 switch redirects client and server traffic.

Only one WAN interface on the HP EFS WAN Accelerator is connected to the Layer-4 switch, and the HP EFS WAN Accelerator is configured to send and receive data through that interface.

The following figure illustrates the server-side vof the network where load balancing is required.

Figure 3-9. In-Path, Load-Balanced, Layer-4 Switch Deployment



Basic Steps (Client-Side)

The client-side HP EFS WAN Accelerator is configured as an in-path device. For detailed information, see "Configuring In-Path HP EFS WAN Accelerators" on page 28.

Basic Steps (Server-Side)

Perform the following steps for each HP EFS WAN Accelerator in the cluster.

1. Mount and power on the HP EFS WAN Accelerator. For details see, "Mounting the HP EFS WAN Accelerator to a Rack" on page 21 and "Powering On the HP EFS WAN Accelerator" on page 25.

2. Connect to the HP EFS WAN Accelerator. For details see, "Connecting to the HP EFS WAN Accelerator" on page 26. Make sure you properly connect to the Layer-2 switch. For example:

   - On HP EFS WAN Accelerator A: plug the straight-through cable into the NIC1 (Primary) port of the HP EFS WAN Accelerator and connect it to the LAN port of the Layer-2 switch.
   - On HP EFS WAN Accelerator B: plug the straight-through cable into the NIC1 (Primary) port of the HP EFS WAN Accelerator and connect it to the LAN port of the Layer-2 switch.

3. Configure the HP EFS WAN Accelerator in an in-path configuration. For details see, "Configuring In-Path HP EFS WAN Accelerators" on page 28.

4. Connect the Layer-4 switch to the HP EFS WAN Accelerator:

   - On HP EFS WAN Accelerator A: plug the straight-through cable into the NIC1 (Primary) port of the HP EFS WAN Accelerator and the WAN port on the Layer-4 switch.

- On HP EFS WAN Accelerator B: plug the straight-through cable into the NIC1 (Primary) port of the HP EFS WAN Accelerator and the WAN port on the Layer-4 switch.

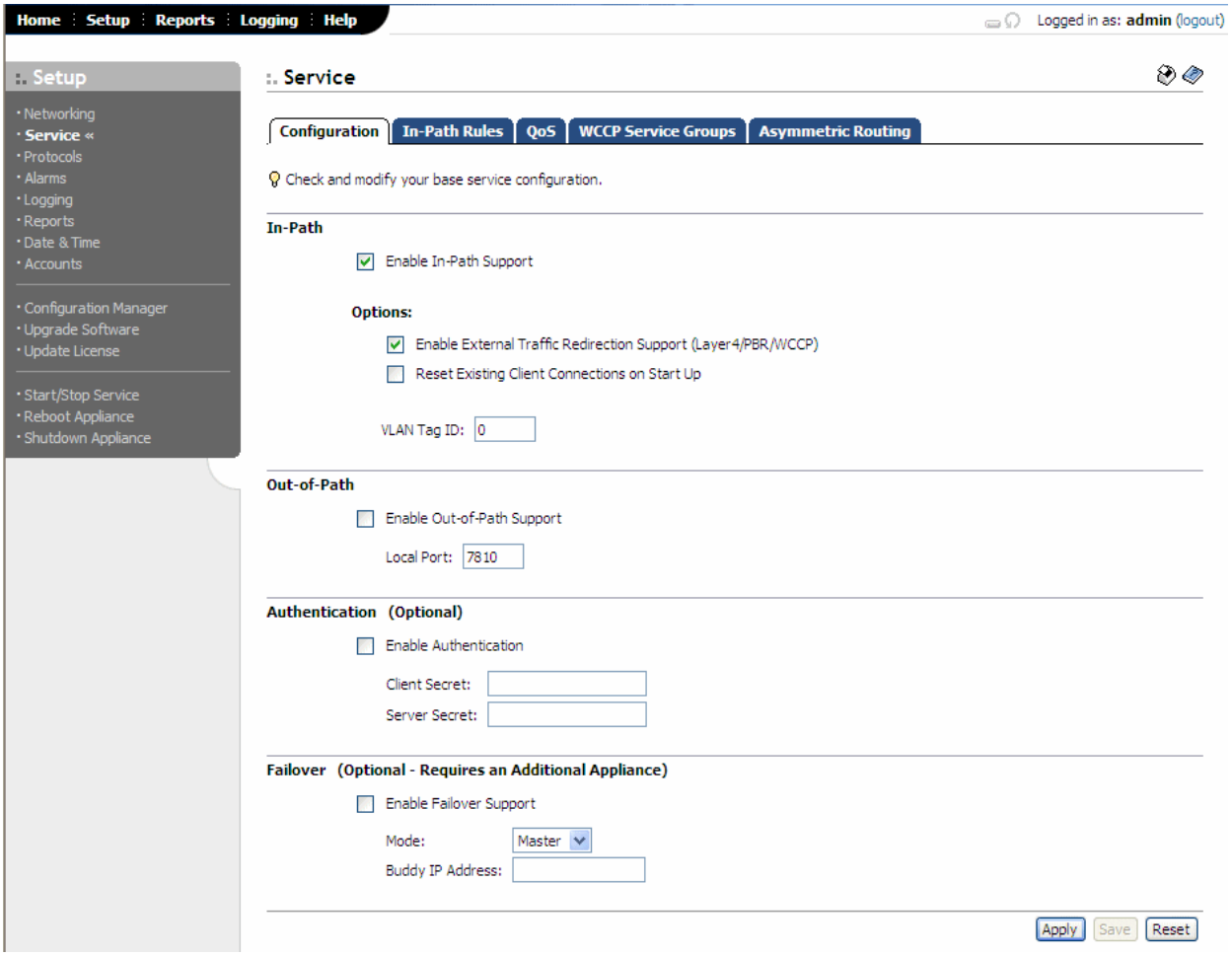
5. Connect to the Management Console to verify your configuration. For details see, "Connecting to the Management Console" on page 33.

6. Enable Layer-4 switch support in the Setup: Service, Configuration page of the Management Console. For example:

   - Click **Enable External Traffic Redirection Support (Layer-4, WCCP, PBR)**.

NOTE: The **Enable In-Path Support** check box is already checked—you specified in-path support in the configuration wizard.

Figure 3-10. Management Console Setup: Service, Configuration Page

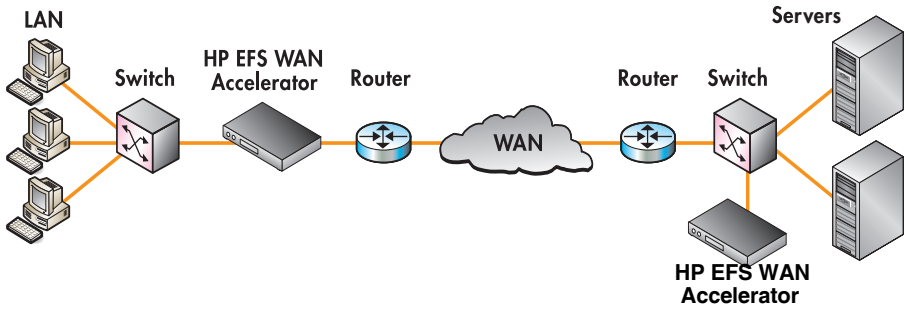


7. Apply and save the new configuration in the Management Console.
8. Reboot the HP EFS WAN Accelerator in the Setup: Reboot Appliance page of theManagement Console.
9. Begin optimization. View performance reports and system logs in the Management Console.

Out-of-Path Deployments

An out-of-path deployment is a network configuration in which the HP EFS WAN Accelerator is not in the direct path between the client and the server.

Figure 3-11. Out-of-Path Deploymen



Typically, in an out-of-path deployment the client-side HP EFS WAN Accelerator is configured as an in-path interface and the server-side HP EFS WAN Accelerator is configured as an out-of-path interface.

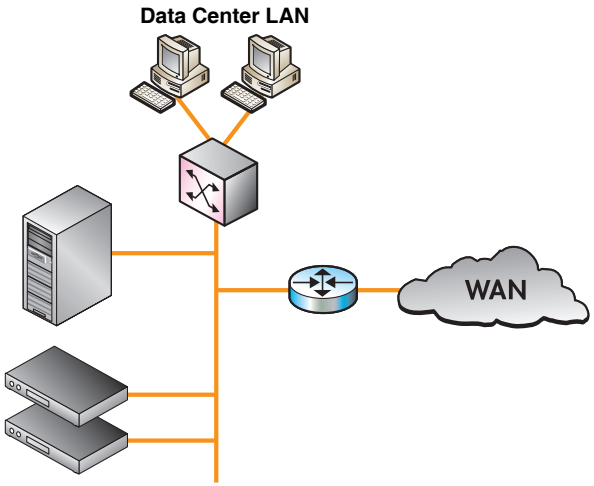
Out-of-Path, Failover Support

In a two appliance out-of-path deployment, when both HP EFS WAN Accelerators are functioning properly, the connections traverse the master appliance. If the master HP EFS WAN Accelerator fails, subsequent connections traverse the backup HP EFS WAN Accelerator.

When the master HP EFS WAN Accelerator is restored, the next connection traverses the master HP EFS WAN Accelerator. If both HP EFS WAN Accelerators fail, the connection is passed through unoptimized to the server.

The following figure illustrates the server-side of the network where two HP EFS WAN Accelerators are deployed in an out-of-path configuration to ensure that data continues to be optimized if there is an error in the system.

Figure 3-12. Out-of-Path, Server-Side, Failover Support Deployment



Basic Steps (Client-Side)

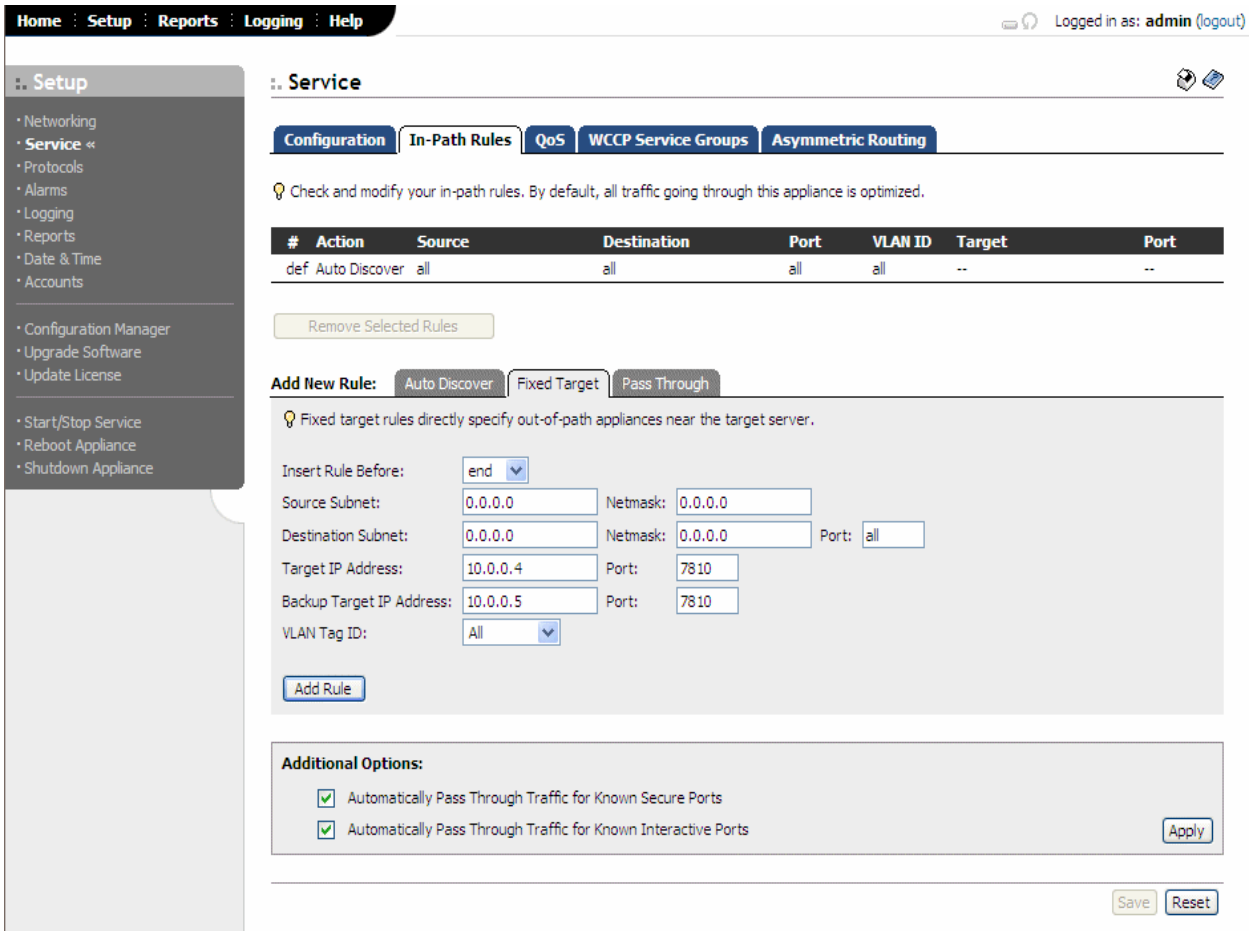
In an out-of-path, two HP EFS WAN Accelerators with failover support deployment, the client-side HP EFS WAN Accelerator is configured in an in-path configuration with fixed-target rules that point to the server-side, out-of-path HP EFS WAN Accelerators.

1. Configure the client-side HP EFS WAN Accelerator in a typical in-path configuration. For detailed information, see "Configuring In-Path HP EFS WAN Accelerators" on page 28.

2. Connect to the Management Console. For details, see "Connecting to the Management Console" on page 33.

3. Navigate to the Setup: Service, In-Path Rules, Fixed-Target page in the Management Console.

Figure 3-13. Management Console: Setup, Service, Configuration Page



4. To enable failover support for the out-of-path HP EFS WAN Accelerator, define a fixed-target rule that points to the appliance. For example:
   - Type the out-of-path, server-side HP EFS WAN Accelerator IP address and port in the **Target IP Address** and **Port** text boxes.
   - Type the backup HP EFS WAN Accelerator IP address and port in the **Backup Target IP Address** and **Port** text boxes.

5. Save and apply the new configuration in the Management Console.

6. Begin optimization. View performance reports and system logs in the Management Console.

Basic Steps (Server-Side)

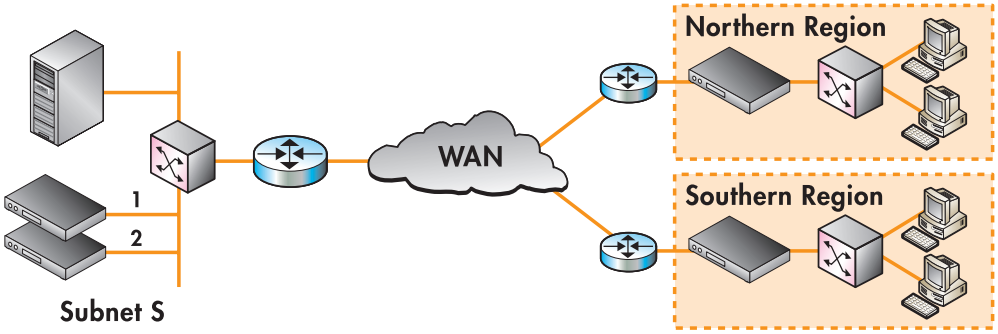
The server-side HP EFS WAN Accelerator is configured as an out-of-path device. For detailed information, see "Configuring Out-of-Path HP EFS WAN Accelerators" on page 35.

Out-of-Path, Static Cluster

An out-of-path, static cluster deployment is appropriate when an in-path deployment is not an option or you require LAN-side Gigabit Ethernet. This deployment handles failures and scales to very high traffic levels. You must configure the remote HP EFS WAN Accelerator.

The following figure illustrates the server-side of the network where two HP EFS WAN Accelerators are out-of-path interfaces and the client-side of the network where there are static clusters with in-path HP EFS WAN Accelerators.

Figure 3-14. Static Cluster Deployment



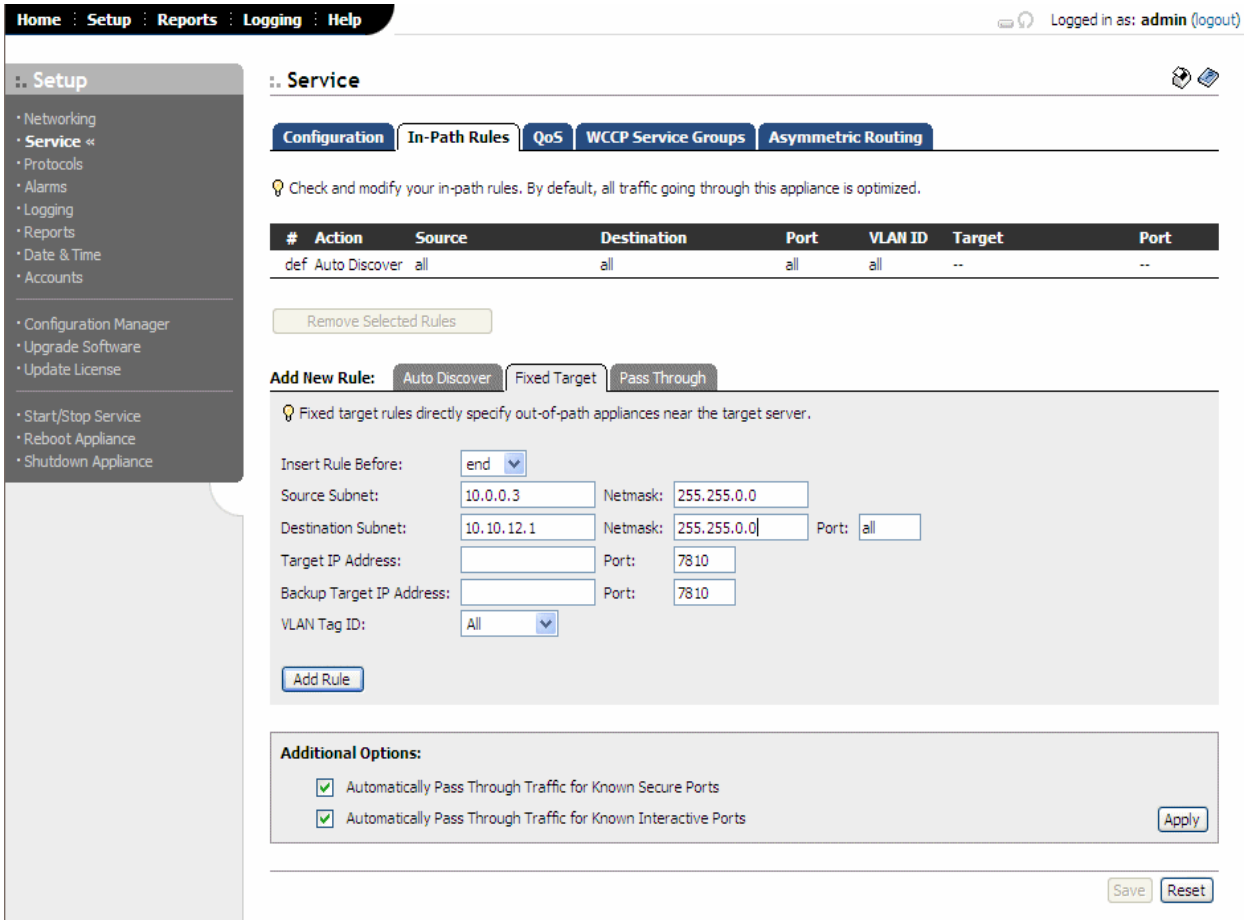
Basic Steps (Client-Side)

Perform the following steps for each HP EFS WAN Accelerator on the client-side of the network.

1. Configure the HP EFS WAN Accelerator in an in-path configuration. For details see, "Configuring In-Path HP EFS WAN Accelerators" on page 28.
2. Connect to the Management Console to verify your configuration. For details see, "Connecting to the Management Console" on page 33.
3. Navigate to the Setup: Service, In-Path Rules, Fixed-Target page in the Management Console.
4. Define fixed target rules for the set of HP EFS WAN Accelerators in each cluster of user sites in the Setup: Service, In Path Rules, Fixed-Target page. For example:
   - In the Northern region, for the HP EFS WAN Accelerators in the set, define HP EFS WAN Accelerator 1 as the fixed target for servers in Subnet S.

- In the Southern region, for all HP EFS WAN Accelerators in the set, define HP EFS WAN Accelerator 2 as the fixed target for Subnet S.

Figure 3-15. Management Console, Setup: In-Path, In-Path Rules, Fixed Target Page



5. Apply and save the new configuration in the Management Console.

6. Begin optimization. View performance reports and system logs in the Management Console.

Basic Steps (Server-Side)

For the server-side, redundant HP EFS WAN Accelerators, follow the procedures for an out-of-path, failover support deployment. For detailed information, see "Out-of-Path, Failover Support" on page 55.

Mixed Deployments

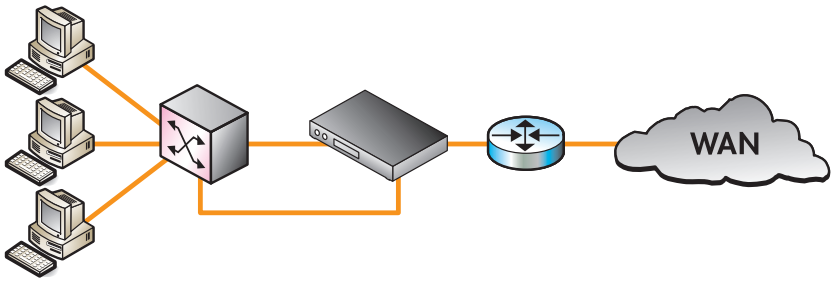
The following section describes deployments that are both in-path and out-of-path. The following deployments display in-path and out-of-path characteristics:

- **Hybrid**. A hybrid deployment is a deployment in which the HP EFS WAN Accelerator is both in-path and out-of-path. This deployment is useful where the HP EFS WAN Accelerator must be referenced from remote sites as an out-of-path device (for example, to avoid mistaken auto-discovery or to bypass intermediary HP EFS WAN Accelerators).
- **Web Cache Communication Protocol (WCCP)**. WCCP enables the client-side to have an out-of-path HP EFS WAN Accelerator. For example, if you have two routers or it there is not a logical place the HP EFS WAN Accelerator. You can place the HP EFS WAN Accelerator logically in-path through the router so that they work together.
- **Policy Based Routing (PBR)**. PBR enables you to redirect traffic to an HP EFS WAN Accelerator that is configured as an out-of-path interface. PBR allows you to define policies to route packets instead of relying on routing protocols. You define policies to redirect traffic to the HP EFS WAN Accelerator and policies to avoid loop-back.

Hybrid: In-Path and Out-of-Path

A hybrid deployment serves offices with one WAN routing point and users, but the HP EFS WAN Accelerator must be referenced from remote sites as an out-of-path device.

Figure 3-16. Hybrid: In-Path and Out-of-Path Deployment



Basic Steps (Client-Side)

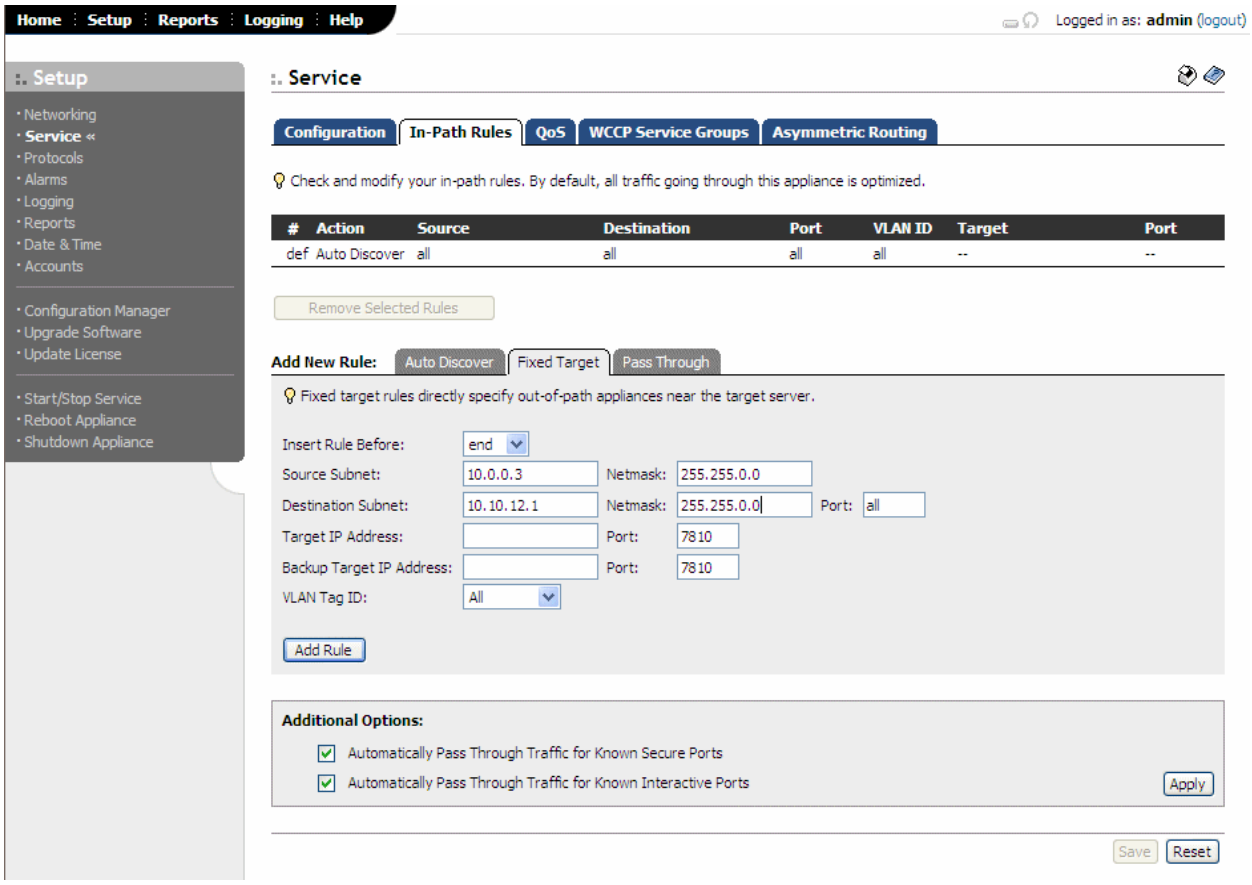
Perform the following steps for the HP EFS WAN Accelerator.

1. Configure the HP EFS WAN Accelerator in an out-of-path configuration. For details see, "Configuring Out-of-Path HP EFS WAN Accelerators" on page 35.

2. Connect to the Management Console to verify your configuration. For details see, "Connecting to the Management Console" on page 33.

3. Define fixed target rules. In the Setup: Service, In Path Rules, Fixed-Target page, define fixed target rules that optimize data for a specific subnet. For example:

Figure 3-17. Management Console, Setup: In-Path, In-Path Rules, Fixed Target Page



4. Apply and save the new configuration in the Management Console.

5. Begin optimization. View performance reports and system logs in the Management Console.

Basic Steps (Server-Side)

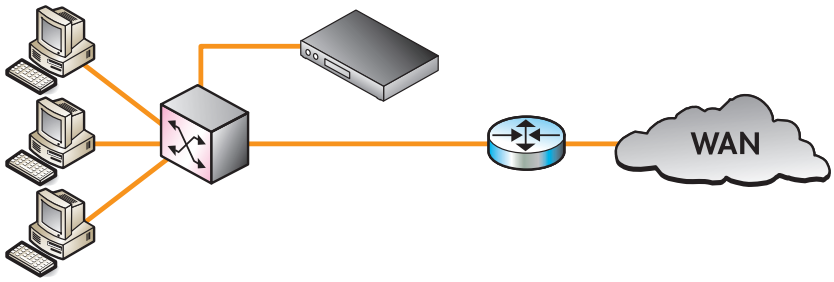
The server-side HP EFS WAN Accelerator is configured as an in--path device. For detailed information, see "Configuring In-Path HP EFS WAN Accelerators" on page 28.

WCCP

WCCP establishes and maintains the transparent redirection of selected types of traffic flowing through a group of routers. If your network design requires you to configure the HP EFS WAN Accelerator as an out-of-path device, you can use WCCP to configure the HP EFS WAN Accelerator out-of-path, yet redirect traffic through it to ensure it is optimized. WCCP is cost-effective, simple to manage, and handles complex WAN interfaces by not interfering with fiber, dual routers, no switch-router links, and so forth.

IMPORTANT: HP recommends you use the HP EFS WAN Accelerator CLI to configure an HP EFS WAN Accelerator for WCCP. For detailed information about how to configure WCCP using the HP EFS WAN Accelerator CLI, see the *HP EFS WAN Accelerator Command-Line Interface Reference Manual*.

Figure 3-18. WCCP Deployment



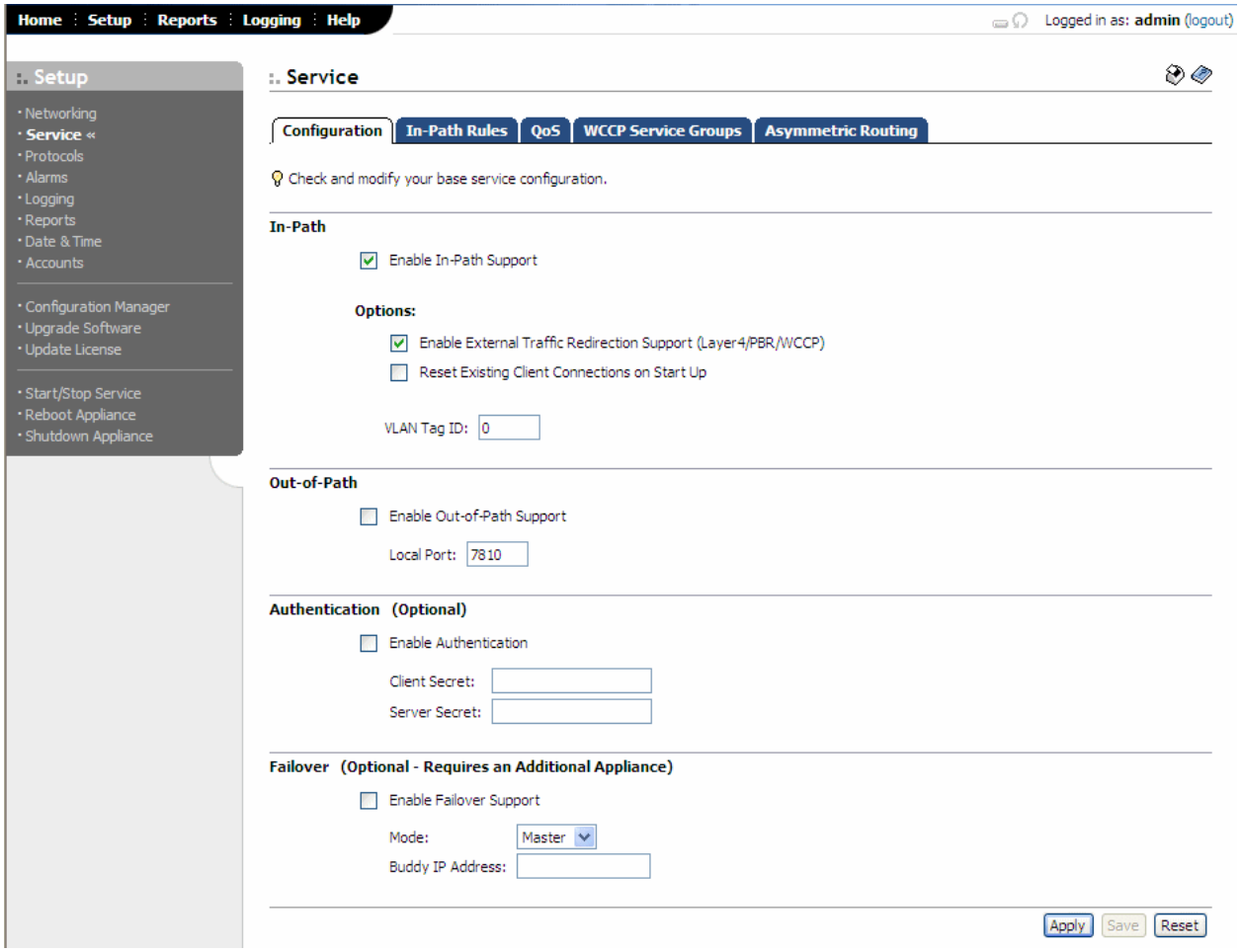
Basic Steps (Client-Side)

Perform the following steps for the client-side HP EFS WAN Accelerator.Configure the HP EFS WAN Accelerator in an in-path configuration. For details see, "Configuring In-Path HP EFS WAN Accelerators" on page 28.

6. Connect to the Management Console. For details see, "Connecting to the Management Console" on page 33.

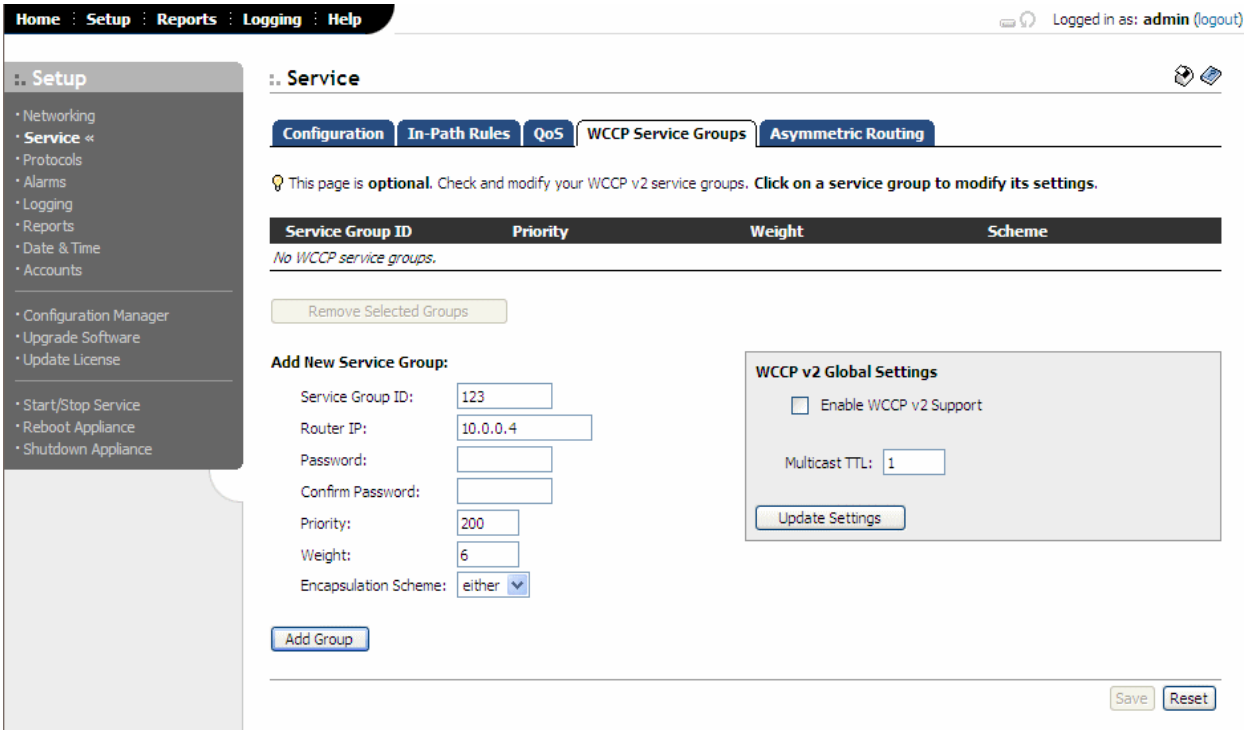
7. Enable external traffic redirection in the Setup: Service, Configuration page of the Management Console.

Figure 3-19. Setup: Service, Configuration Page



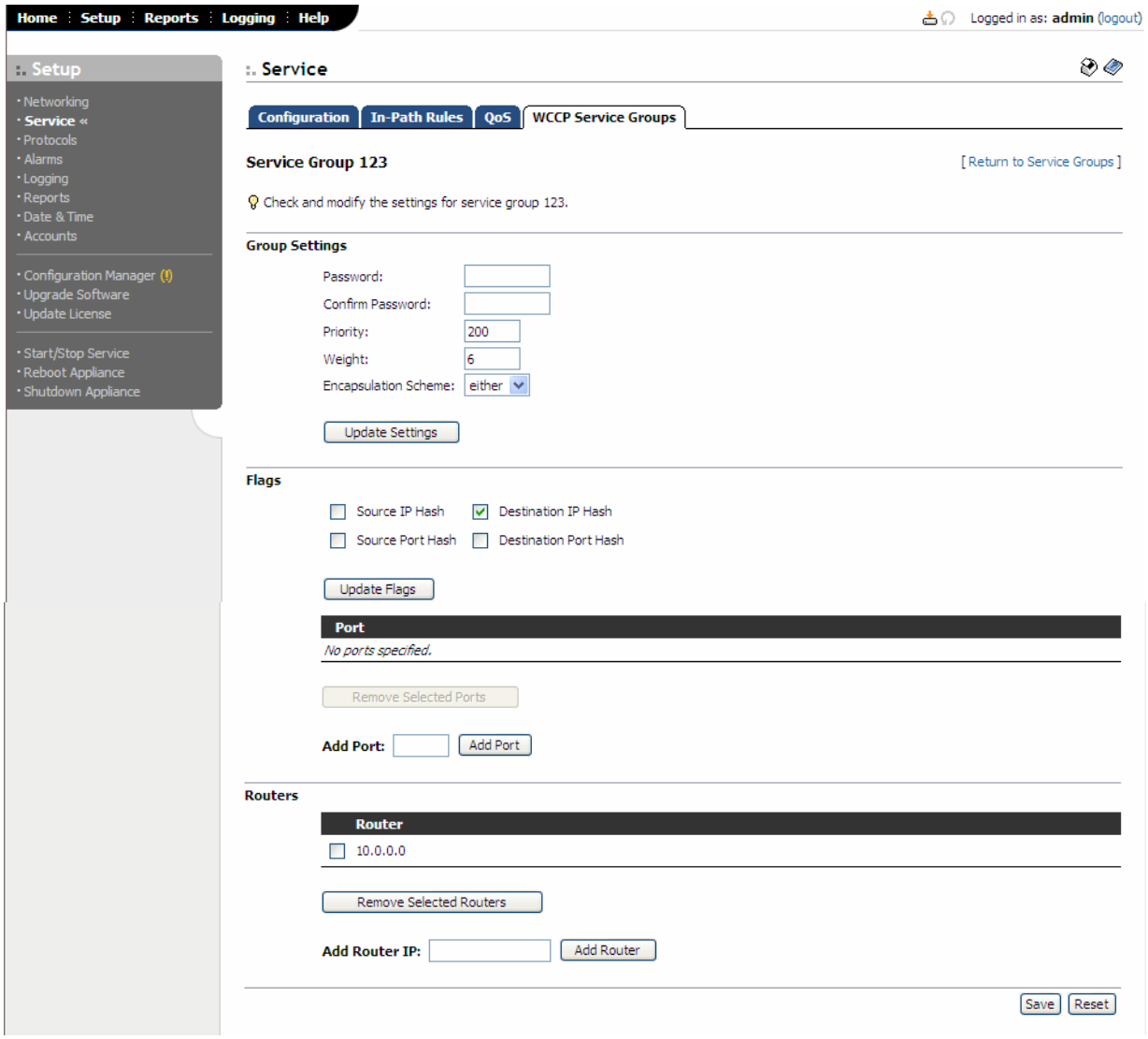
8. Define WCCP service groups in the Setup: Service, WCCP Groups page.

Figure 3-20. Setup: Service, WCCP Service Groups Page



9. Edit the service groups to define flags, ports, and routers in the Setup: Service, WCCP Groups, Service Group page.

Figure 3-21. Setup: Service, WCCP Groups Page



10. Define WCCP policies on your router.

11. Save and apply the new configuration in the Management Console.

12. Begin optimization. View performance reports and system logs in the Management Console.

Basic Steps (Server-Side)

The server-side HP EFS WAN Accelerator is configured as an in-path device. For detailed information, see "Configuring In-Path HP EFS WAN Accelerators" on page 28.

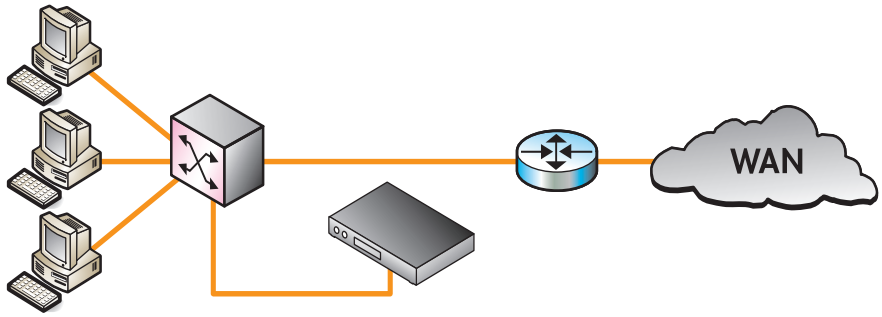
PBR

Policy-Based routing (PBR) enables you to define policies to route packets instead of relying on routing protocols. You enable PBR to redirect traffic that you want to optimize to an HP EFS WAN Accelerator that is configured as an out-of-path device. You must configure your router in addition to the HP EFS WAN Accelerator.

TIP: HP recommends you use the HP EFS WAN Accelerator CLI to configure an HP EFS WAN Accelerator for PBR. For detailed information about how to configure PBR using the HP EFS WAN Accelerator CLI, see the *HP EFS WAN Accelerator Command-Line Interface Reference Manual*.

The following figure illustrates the client-side of the network where the HP EFS WAN Accelerator is configured as an out-of-path device and the router has been configured with polices that enable traffic redirection.

Figure 3-22. PBR Deployment



Basic Steps (Client-Side)

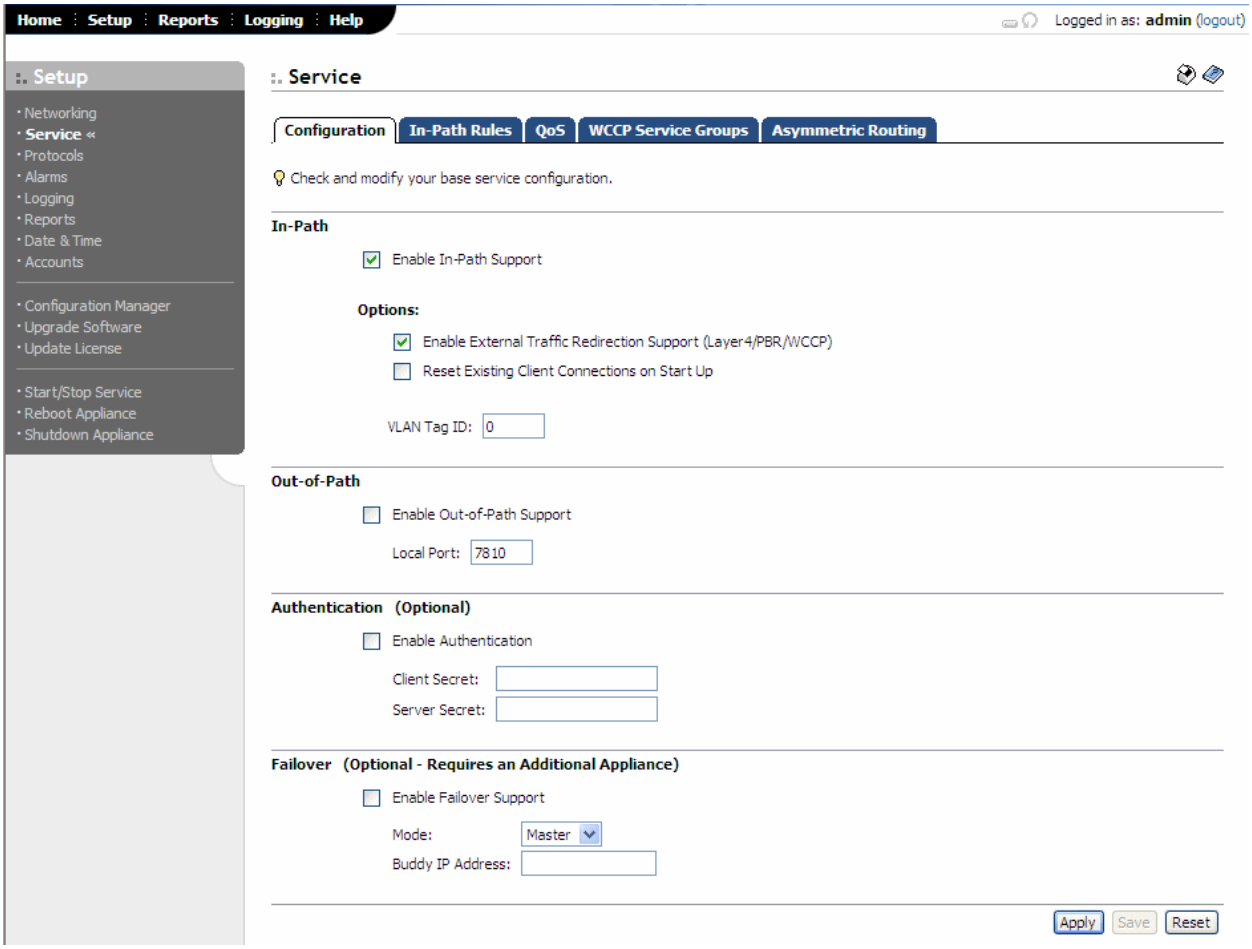
Perform the following steps for the client-side HP EFS WAN Accelerator.

1. Configure the HP EFS WAN Accelerator in an in-path configuration. For details see, "Configuring In-Path HP EFS WAN Accelerators" on page 28.

2. Connect to the Management Console. For details see, "Connecting to the Management Console" on page 33.

3. Enable external traffic redirection in the Setup: Service, Configuration page of the Management Console.

Figure 3-23. Setup: Service, Configuration Page



4. Define PBR policies on your router.

5. Save and apply the new configuration in the Management Console.

6. Begin optimization. View performance reports and system logs in the Management Console.

Basic Steps (Server-Side)

The server-side HP EFS WAN Accelerator is configured as an in-path device. For detailed information, see "Configuring In-Path HP EFS WAN Accelerators" on page 28.

CHAPTER 4

Recovering from a Disaster

In This Chapter

If the HP EFS WAN Accelerator sustains hardware failures, you can use the Quick Restore CD you received with your product to restore your appliance storage configuration and disk image to the original factory settings. This chapter explains the recovery procedure.

NOTE: Cached data and configuration changes you made to the system are not recovered.

Recovery Procedure

1. Insert the Quick Restore CD in the HP EFS WAN Accelerator or HP EFS WAN Accelerator Manager DVD-ROM drive.

2. Reboot the server by turning off and then turning on the power. The system boots and the CD loads.

3. When prompted by the system, select **R** to restore your appliance storage configuration and disk image to the factory settings.

CHAPTER 5

Replacing HP EFS WAN Accelerator Components

In This Chapter

The HP ProLiant DL320-510, DL320-1010, and DL320-2010 and the HP ProLiant DL380-3010 and DL380-5010 contain replaceable fans, disk drives, and power supply units. For replacement procedures, refer to either the *HP ProLiant DL320 Generation 3 Server Maintenance and Service Guide* or the *HP ProLiant DL380 Generation 4 Maintenance and Service Guide* available on the web from the link on the documentation CD-ROM that came with your product.

APPENDIX A

Technical Specifications and Regulatory Information

In This Appendix

Technical specifications and regulatory information are contained in the documentation for your product. Refer to either the *HP ProLiant DL320 Generation 3 Server User Guide* or the *HP ProLiant DL380 Generation 4 Server Reference and Troubleshooting Guide* available on the documentation set CD-ROM that came with your product for specific information.

APPENDIX B

HP EFS WAN Accelerator Ports

In This Appendix

This appendix describes the HP EFS WAN Accelerator default, secure, and interactive ports. It contains the following sections:

Default Ports

The HP EFS WAN Accelerator uses the following default ports.

- In-Path Listening Port: 7800
- Out-of-Path Server Port: 7810
- Failover Port: 7820
- Exchange Port: 7830

Commonly Optimized Ports

The HP EFS WAN Accelerator by default optimizes all ports. If you do not want the HP EFS WAN Accelerator to optimize all ports for an in-path or out-of path configuration, you can specify specific ports for optimization.

Although these ports can vary according to your requirements, the following ports are commonly specified for in-path and out-of-path configurations:

- 80
- 135
- 139

- 445
- 7830

Interactive Ports Automatically Forwarded by the HP EFS WAN Accelerator

The following interactive ports are automatically forwarded by the HP EFS WAN Accelerator when you enable forwarding of interactive ports in the Management Console.

Port	Description
7	TCP ECHO
23	Telnet
37	UDP/Time
107	Remote Telnet Service
513	Remote Login
514	Shell
3389	MS WBT Server, TS/Remote Desktop
5631	PC Anywhere
5900-5903	VNC
6000	X11

For detailed information about how to set interactive port forwarding, see the *HP EFS WAN Accelerator Management Console User's Guide*.

Secure Ports Automatically Forwarded by the HP EFS WAN Accelerator

The following tables contain the secure ports that are automatically forwarded by the HP EFS WAN Accelerator when you enable forwarding of secure ports in the Management Console.

For detailed information about how to enable forwarding of secure ports, see the *HP EFS WAN Accelerator Management Console User's Guide*.

Type	Port	Description
ssh	22/tcp	SSH Remote Login Protocol
https	443/tcp	http protocol over TLS/SSL
smtps	465/tcp	SMTP over SSL (TLS)
nntps	563/tcp	nntp protocol over TLS/SSL (was snntp)
imap4-ssl	585/tcp	IMAP4+SSL (use 993 instead)
sshell	614/tcp	SSLshell
ldaps	636/tcp	ldap protocol over TLS/SSL (was sldap)
ftps-data	989/tcp	ftp protocol data over TLS/SSL
ftps	990/tcp	ftp protocol control over TLS/SSL
telnets	992/tcp	telnet protocol over TLS/SSL
imaps	993/tcp	imap4 protocol over TLS/SSL
pop3s	995/tcp	pop3 protocol over TLS/SSL (was spop3)
l2tp	1701/tcp	l2tp
pptp	1723/tcp	pptp
tftps	3713/tcp	TFTP over TLS

The following table contains the uncommon ports automatically forwarded by the HP EFS WAN Accelerator.

Type	Port	Description
nsiiops	261/tcp	IIOP Name Service over TLS/SSL
ddm-ssl	448/tcp	DDM-Remote DB Access Using Secure Sockets
corba-iiop-ssl	684/tcp	CORBA IIOP SSL
ieee-mms-ssl	695/tcp	IEEE-MMS-SSL
ircs	994/tcp	irc protocol over TLS/SSL
njenet-ssl	2252/tcp	NJENET using SSL
ssm-cssps	2478/tcp	SecurSight Authentication Server (SSL)
ssm-els	2479/tcp	SecurSight Event Logging Server (SSL)
giop-ssl	2482/tcp	Oracle GIOP SSL
ttc-ssl	2484/tcp	Oracle TTC SSL
syncserverssl	2679/tcp	Sync Server SSL
dicom-tls	2762/tcp	DICOM TLS
realsecure	2998/tcp	Real Secure
orbix-loc-ssl	3077/tcp	Orbix 2000 Locator SSL

Type	Port	Description
orbix-cfg-ssl	3078/tcp	Orbix 2000 Locator SSL
cops-tls	3183/tcp	COPS/TLS
csvr-sslproxy	3191/tcp	ConServR SSL Proxy
xnm-ssl	3220/tcp	XML NM over SSL
msft-gc-ssl	3269/tcp	Microsoft Global Catalog with LDAP/SSL
networklenss	3410/tcp	NetworkLens SSL Event
xtrms	3424/tcp	xTrade over TLS/SSL
jt400-ssl	3471/tcp	jt400-ssl
seclayer-tls	3496/tcp	securitylayer over tls
vt-ssl	3509/tcp	Virtual Token SSL Port
jboss-iiop-ssl	3529/tcp	JBoss IIOP/SSL
ibm-diradm-ssl	3539/tcp	IBM Directory Server SSL
can-nds-ssl	3660/tcp	Candle Directory Services using SSL
can-ferret-ssl	3661/tcp	Candle Directory Services using SSL
linktest-s	3747/tcp	LXPRO.COM LinkTest SSL
asap-tcp-tls	3864/tcp	asap/tls tcp port
topflow-ssl	3885/tcp	TopFlow SSL
sdo-tls	3896/tcp	Simple Distributed Objects over TLS
sdo-ssh	3897/tcp	Simple Distributed Objects over SSH
iss-mgmt-ssl	3995/tcp	ISS Management Svcs SSL
suucp	4031/tcp	UUCP over SSL
wsm-server-ssl	5007/tcp	wsm server ssl
sip-tls	5061/tcp	SIP-TLS
imqtunnels	7674/tcp	iMQ SSL tunnel
davsrcs	9802/tcp	WebDAV Source TLS/SSL
intrepid-ssl	11751/tcp	Intrepid SSL
rets-ssl	12109/tcp	RETS over SSL

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Glossary

Bandwidth. The upper limit on the amount of data, typically in kilobits per second (kbps), that can pass through a network connection. Greater bandwidth indicates faster data transfer capability.

CIFS. Common Internet File System. CIFS is the remote file system access protocol used by Windows servers and clients to share files across the network.

DHCP. Dynamic Host Configuration Protocol. Software that automatically assigns IP addresses to client stations logging onto a TCP/IP network.

Domain. In the Internet, a portion of the Domain Name Service (DNS) that refers to groupings of networks based on the type of organization or geography.

DNS. Domain Name Service. System used in the Internet for translating names of network nodes into IP addresses. A Domain Name Server notifies hosts of other host IP addresses, associating host names with IP addresses.

Ethernet. The most widely used Local Area Network (LAN) access method.

Host. A computer or other computing device that resides on a network.

Host address. The IP address assigned to each computer attached to the network.

Host name. Name given to a computer, usually by DNS.

HTTP. HyperText Transport Protocol. The protocol used by Web browsers to communicate with Web servers.

HTTPS. HyperText Transport Protocol Secure.The protocol for accessing a secure Web server. Using HTTPS directs the message to a secure port number to be managed by a security protocol.

IP. Internet protocol. Network layer protocol in the TCP/IP stack that enables a connectionless internetwork service.

IP address. In IP version 4 (IPv4), a 32-bit address assigned to hosts using the IP protocol. Also called an Internet address.

Netmask. A 32-bit mask which shows how an Internet address is divided into network, subnet, and host parts. The netmask has ones in the bit positions in the 32-bit address which are used for the network and subnet parts, and zeros for the host part. The mask must contain at least the standard network portion (as determined by the class of the address), and the subnet field should be contiguous with the network portion.

NFS. Network File System. The file sharing protocol in a UNIX network.

SNMP. Simple Network Management Protocol. A widely used network monitoring and control protocol. Data is passed from SNMP agents, which are hardware or software processes reporting activity in each network device (hub, router, bridge, and so forth) to the workstation console used to oversee the network.

TCP. Transmission Control Protocol. The error correcting Transport layer (Layer 4) in the TCP/IP protocol suite.

TCP/IP. Transmission Control Protocol/Internet Protocol. The protocol suite used in the Internet, intranets, and extranets.

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